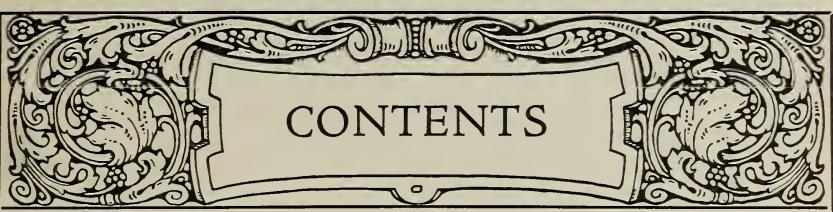


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SUBSCRIPTION RATES.—One year, \$1.00; two years, \$1.50; three years, \$2.00; five years, \$3.00. Canadian subscription, 30 cents additional per year, and foreign subscription, 60 cents additional. **DISCONTINUANCES.**—On and after March 1, 1917, all subscriptions, not paid in advance, or specifically ordered by the subscriber to be continued, will be stopped on expiration. No subscriber will be run into debt by us for this journal.

CHANGE OF ADDRESS.—Give your old address as well as the new and write the name that appears on the paper. **REMITTANCE.**—Should be sent by postoffice money order, bank draft, express money order or check. **CONTRIBUTIONS** to Gleanings columns solicited; stamps should be enclosed to insure return to author of manuscript if not printed.

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THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

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SHIPPING-CASES FOR COMB HONEY

Don't make the mistake of putting a fine lot of section honey in poor shipping-cases. It will lower the price to you and damage your future sales. "Falcon" cases are A No. 1, and will be a credit to any crop of honey. Prices are as follows:

Shipping-cases in Flat, without Glass.

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| No. 1 . . . holding 24 sections, 4 $\frac{1}{4}$ x 1 $\frac{1}{8}$, showing 4 | 10, \$2.00; 100, \$18.00 |
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| No. 6 . . . holding 24 sections, 3 $\frac{3}{4}$ x 5 x 1 $\frac{1}{8}$, showing 4 | 10, \$1.80; 100, \$16.00 |
| No. 8 . . . holding 24 sections, 4 x 5 x 1 $\frac{1}{8}$, showing 4 | 10, \$1.80; 100, \$16.00 |

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|---|-----------------------------|-----------------------------|
| No. 11 . . . Same as No. 1 . . . Nailed, 35c; in flat 1, 25c; 10, \$2.30; 100, \$21.00 | with 3-inch glass | with 2-inch glass |
| No. 13 . . . Same as No. 3 . . . Nailed, 22c; in flat, 1, 15c; 10, \$1.40; 100, \$12.50 | | 100, \$20.00 |
| No. 11 $\frac{1}{2}$. . . Same as No. 1 $\frac{1}{2}$. . . Nailed, 35c; in flat, 1, 25c; 10, \$2.20; 100, \$20.00 | | 100, \$12.00 |
| No. 16 . . . Same as No. 6 . . . Nailed, 30c; in flat, 1, 22c; 10, \$2.10; 100, \$19.00 | | 100, \$19.00 |
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"Simplified Beekeeping," postpaid

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where the good beehives come from.

You Don't Wait for Money When You Ship Muth Your Honey

We Remit the Day Shipments Arrive

We are in the market to buy **FANCY AND NUMBER ONE WHITE COMB HONEY**, in no-drip glass-front cases. Tell us what you have to offer and name your price delivered here.

Will also buy—

White Clover extracted and Amber extracted.

A few cars of California Water White Sage.

A few cars of California Orange Blossom.

When offering extracted honey mail us a sample and give your lowest price delivered here. We buy every time you name a good price.

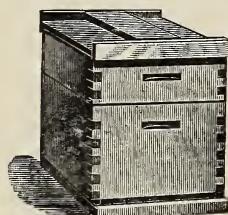
We do beeswax rendering; ship us your old combs and cappings. Write us for terms.

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"The Busy Bee Men"

204 Walnut Street

Cincinnati, Ohio



Early-order Discounts will
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30 years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. . . . Write for our illustrated catalog and discounts today.

Leahy Mfg. Co., 95 Sixth St., Higginsville, Missouri

HONEY MARKETS

FLORIDA.—The demand is good, but no stock on hand. Extra fancy comb honey, per case, brings 10 to 12½; fancy, 10. White extracted honey, per lb., 10; light amber, in cans, 8; in barrels, 7½.

Wewahitchka, Fla., Jan. 19. S. S. Alderman.

BOSTON.—Extracted honey in 60-lb. cans, none on hand. Several lots in transit held up by freight embargos. We quote extra fancy comb honey, per case, \$3.50; fancy, \$3.25; No. 1, \$3.00.

Boston, Mass., Jan. 22. Blake-Lee Co.

CLEVELAND.—No special change in our market; supply only moderate; demand continues light. We quote fancy comb honey, per case, \$3.75 to \$4.00; No. 1, \$3.50 to \$3.65; No. 2, \$3.00 to \$3.20.

C. Chandler's Sons.

Cleveland, O., Jan. 25.

PITTSBURG.—Demand is somewhat better, prices holding steady. We quote extra fancy comb honey, per case, \$3.75 to \$3.90; fancy, \$3.50 to \$3.60; No. 1, \$3.00; No. 1 buckwheat, \$3.40 to \$3.50.

Pittsburg, Pa., Jan. 24. W. E. Osborn Co.

TORONTO.—The market is steady, and practically unchanged since the last issue. The consumption of honey during the next few months should be very heavy, and higher prices are expected.

Toronto, Can., Jan. 23. Eby-Blain Limited.

HAMILTON.—Demand is much better since the first of the year for both comb and extracted. We quote extra fancy comb honey, per case, \$2.50 per doz. No. 1, \$2.25; No. 2, \$1.60. White extracted honey, per lb., brings 12 cts. in 60-lb. cans; 13 in 5-lb. cans; light amber, in cans, 10.

F. W. Fearman Co., Ltd. Hamilton, Ont., Jan. 22. MacNab St. Branch.

MONTREAL.—Demand is good. Stocks are reducing fast, and higher prices are likely soon. We quote extra fancy comb honey, per lb., 17; fancy, 16; No. 1, 15; No. 2, 12. White extracted honey brings 12½; light amber, in cans, 10½; in barrels, 10; amber, in cans, 9½; in barrels, 9.

Gunn, Langlois & Co., Ltd.

Montreal, Que., Jan. 23.

SYRACUSE.—The situation of the honey market has not materially changed since last quotation. The demand for comb honey has possibly improved somewhat the last week. We quote fancy comb honey, per case, \$3.60; No. 1, \$3.00. White extracted honey brings 9 cts.; light amber, in cans, 8 to 9.

E. B. Ross.

Syracuse, Jan. 24.

PORTRLAND.—Comb honey is not very active. Prices are very unsatisfactory on account of prohibitive freight rates on local shipments. Extracted is in fair demand only. We quote extra fancy comb honey, per case, \$3.50; fancy, \$3.25; No. 1, \$3.00; No. 2, \$2.75. White extracted honey brings 9 cts.; light amber, in cans, 8; amber, in cans, 7½. Clean, average yellow beeswax brings 25 to 26.

PHILADELPHIA.—Comb honey is moving fairly well, particularly medium-priced goods. We have inquiries for extracted, particularly light or dark amber. Write us what you have to offer. Our jobbing prices to retail dealers are for extra fancy comb honey, per case, 18; fancy, 17; No. 1, 13 to 14; No. 2, 11 to 12. Clean, average yellow beeswax brings 30 to 32.

Chas. Munder.

Philadelphia, Pa., Jan. 22.

LOS ANGELES.—These prices are what the retailer pays our wholesale customers, not what we are buying at. There is no supply of extracted except for local use, but a surplus of comb with little demand. Local prices on extracted slightly advanced, with stronger demand for honey. We quote extra fancy comb honey, per case, \$4.25; fancy, \$3.85; No. 1, \$3.25; No. 2, \$2.50. Water-white, stock is exhausted. White extracted honey, per lb., brings 9½; light amber, in cans, 8; amber, in cans, 7. Clean, average yellow beeswax brings 35.

Los Angeles, Cal., Jan. 20. Geo. L. Emerson.

KANSAS CITY.—The market on extracted honey is very firm, the same selling at from 7 to 9 cents a pound, according to quality and kind. Some southern honey sold as low as 6½ cents, but it was dark. We quote No. 1 comb honey, per case, \$2.75; No. 2, \$2.50. Clean, average yellow beeswax brings 28.

C. C. Clemons Produce Co.

Kansas City, Mo., Jan. 22.

DENVER.—The demand for comb honey in car-load lots is improving. We are quoting the following jobbing prices: Fancy white, \$2.84; No. 1 white, \$2.70; No. 2 white, \$2.57, per case of 24 sections. Extracted white, per pound, brings 9 to 9½; light amber, 8½ to 9. We are always in the market for beeswax. For clean yellow wax we are paying 30 cts. per pound in cash and 32 in trade, delivered in Denver.

Colorado Honey-producers' Ass'n.

Denver, Colo., Jan. 18. F. Rauchfuss, Mgr.

ST. LOUIS.—Comb honey is still moving very slowly in this market, and supplies are quite ample for the demand. Extracted honey is in good demand, and stocks are almost cleaned up. Southern extracted honey in barrels and cans would meet with ready sale. We quote extra fancy comb honey, per case, \$3.50; fancy, \$3.25; No. 1, \$3.00; No. 2, \$2.75. Light amber extracted honey, in cans, brings 10 cts.; amber, 7½ to 8; in barrels, 7 to 7½. Clean, average yellow beeswax, per lb., brings 33½.

R. Hartmann Produce Co.

St. Louis, Mo., Jan. 22.

CHICAGO.—Comb honey is beginning to move a little more freely than for the past thirty days, and it may be that we will clean up yet to a greater extent than was the expectation sixty days ago. Prices are, if anything, weaker. Best grades of white are bringing 14 cts. per lb. with an occasional small lot at 15. Amber grades are from 1 to 2 cts. per lb. less. Extracted remains steady at from 9 to 10 for the best grades of white, with ambers at 7 to 8. Light ambers, good flavor, sell at 9 cts. Beeswax is ranging at from 30 to 32 per lb.

Chicago, Ill., Jan. 18. R. A. Burnett & Co.

TEXAS.—I note with the inquiries for honey there are more calls for extracted than ever before. I hope this will continue. The consumer has begun to realize that he is getting the pure article in this form, and it does not cost him nearly so much. These are some good results from the pure-food law. We quote No. 1 bulk comb in sixty-pound cans 10½ to 11; No. 2, 9½ to 10; ½ ct. advance for small sizes. Light-amber extracted honey, in cans, brings 8½ to 9; in barrels, 7½ to 8; amber, in cans, 7½ to 8; in barrels, 6½ to 7. Clean average yellow beeswax brings 27 to 28.

Sabinal, Tex., Jan. 17. J. A. Simmons.

SAN FRANCISCO.—Very little movement in comb honey; but stocks are not heavy, and everything will clean up by spring. Extracted seems to be wanted from all sides, and the demand exceeds the supply on good grades. Very few lots of extracted honey are in first hands, and it is difficult to give exact buying figures, as asking prices may be higher or even lower than quotations. Some black honey-dew has been offered, but not sold. We quote extra fancy comb honey, per case, \$3.00; fancy, \$2.75 to \$2.85; No. 1, \$2.40 to \$2.50. White extracted honey, per lb., 8 to 9; scarce; light amber, in cans, brings 7½ to 8; amber, in cans, 6 to 7. Clean average yellow beeswax, per lb., brings 30 to 35.

Leutzinger & Lane.

San Francisco, Cal., Jan. 20.

NEW YORK.—Nothing new to report so far as comb honey is concerned. Some demand for No. 1 and fancy white stock, but these grades are fairly well cleaned up. Considerable stock on the market of off grades for which there is little demand, and while choice white stock will still bring around 14 to 15c per pound, off grades are hard to dispose of at 10 or 11c per pound. Extracted honey is in good demand with the exception of buckwheat, for which the season is practically over. Domestic crop pretty well cleaned up and new crop of West India, which is now arriving in large quantities, is in good demand and prices are advancing. We refrain from making quotations as they would probably not hold good for any length of time. Beeswax is steady and in good demand from 32 to 34c per pound, according to quality.

New York, Jan. 24. Hildreth & Segelken.

Beekeepers' Supplies.....

Now is the time to order your supplies for next season, and have everything in readiness for next Spring. Take advantage of the early-order cash discount, and send us a list of the supplies wanted, and we will be pleased to quote you. We will mail you our catalog upon request; in short, we handle everything a beekeeper requires for the proper conduct of an apiary; Root's goods at factory prices.

C. H. W. Weber & Company, Cincinnati, O.

2146 Central Avenue

One successful producer of extracted honey in Michigan has sufficient extracting bodies filled with drawn comb for a maximum crop. Last year he harvested twenty tons of finest white-clover honey.

His bucket was right side up when it rained honey.

We know of others who reported to us that last year was a "poor year."

The difference was mainly in equipment.

How about your equipment? Make it "Root Quality" and buy it now. We gladly quote prices. Send in your name for our 1917 catalog. Beeswax wanted.

M. H. Hunt & Son, Lansing, Michigan

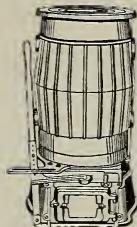
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ONE STOVE AND ONE FIRE
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Established 1885

It will pay you to get our 64-page
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Beekeepers' Supplies

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PENNSYLVANIA BEEKEEPERS

Our catalogs now out. Postal will bring you one. Root's goods at Root's prices. Prompt shipment.

E. M. Dunkel, Osceola Mills, Pa.

CANDY

Bees sometimes starve with plenty of honey in the hive. Why not avoid this risk by placing a plate or two of candy on the frames when you pack for winter? It is a good life insurance. Send for circular also catalog of supplies.

H. H. Jepson, 182 Friend St., Boston, Mass.

**In the Beginning is where Quality Starts
The Same Old Slogan for 1917**

Untested Queens, \$1; Tested, \$2; Sel. Tested, \$3
Deliveries begin early in May,
and orders filled in rotation.

Geo. W. Phillips, . . . Lebanon, Ohio

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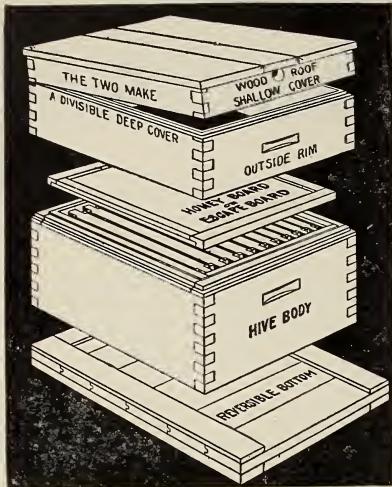
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ASSETS OVER ONE MILLION DOLLARS

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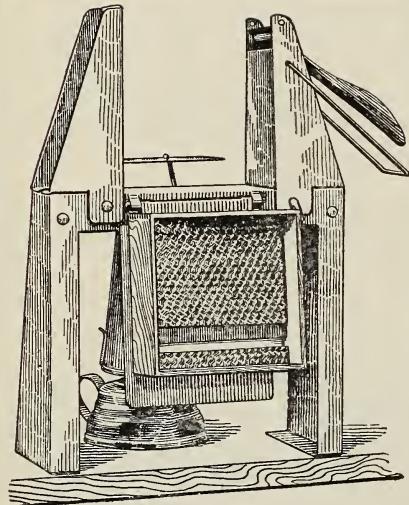
for manufacture into
"SUPERIOR FOUNDATION"
on shares (Weed process)

Our terms assure cheaper foundation
SUPERIOR HONEY CO., Ogden, Utah
Wanted: Extracted honey



Protection Hives

Price \$13.75 for 5 hives, f. o. b. Grand Rapids, Mich. Delivered prices furnished on request. Double wall with air spaces, insulation, or packing as you may prefer. Over an inch of space between the outer and inner walls. Total wall space two and a quarter inches. If you have ever had occasion to spend any time in a building single-boarded, during cold weather, you can appreciate the advantages of double walls. Even with a redhot stove you are freezing on one side and roasting on the other. Double walls relieve this condition and reduce the quantity of fuel necessary. Honey is the fuel, the bee the stove. The life of the bee as well as the stove depends on its work; do not burn them out. Send for catalog and special circulars. We are the beehive people. Send us a list of your requirements for 1917 and let us figure with you. Small as well as large orders are wanted. Let us add you to our list of many pleased customers in all parts of the country.



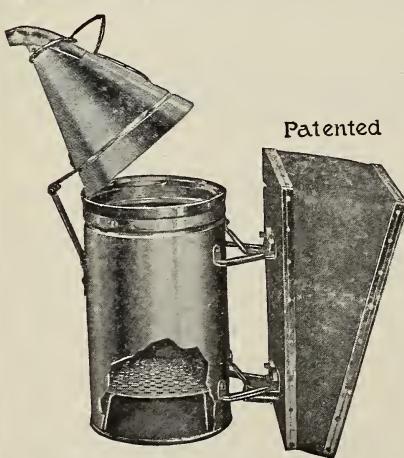
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A combined section-press and foundation-fastener of pressed-steel construction. It folds the section and puts in top and bottom starters all at one handling, thus saving a great amount of labor. With top and bottom starters the comb is firmly attached to all four sides — a requirement to grade fancy. Increase the value of your crop by this method. H. W. Schultz, of Middleton, Mich., in writing us says: "Your section-fixer is the best yet; can put up 150 sections per hour with top and bottom starters." Price with lamp, \$2.75. Shipping weight 5 lbs. Postage extra. Send for special circular fully describing this machine.

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has been on the market nearly forty years, and is the standard in this and many foreign countries. It is the all-important tool of the most extensive honey-producers of the world. For sale direct or by all dealers in beekeepers' supplies.

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| Smoke Engine, 4-inch stove..... | \$1.25 |
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| Two above sizes in copper, 50 cts. extra | |
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| Hinged cover on two larger sizes. | |
| Postage extra. | |



Patented

A. G. Woodman Co.
Grand Rapids, Mich.

Order Your 1917 Supplies from Syracuse

We Carry the Largest Line in New York State

And are fully prepared to fill your order at once, as we have just received five more carloads of fresh supplies from the factory. Many last year got left on their five-gallon cans, as we were sold out early. This year we have almost twice as many in stock; but to be sure of them you better place your order now. They keep.

Hives and supplies purchased now can be put together in a good workmanlike way, and painted during the idle winter days, and they will be ready when the bees swarm in the spring.

We have 10 old-style Chaff Hives, eight-frame, and one gross of one-pint premium jars that we should like to dispose of. Send for price.

Send for our 1917 catalog with new prices.

F. A. Salisbury, Syracuse, New York
1631 West Genesee St.

Look for the
BEEWARE BRAND
on all your
Hives, Supers, and Sections



Our New 1917 Catalog
is Now Out

Be Sure You Get Your Copy

G. B. Lewis Company
Watertown, Wis.

GLEANINGS IN BEE CULTURE

FEBRUARY, 1917



EDITORIAL

KIND WORDS are pouring in by every mail in praise of the new GLEANINGS—not

only for its ty-

KIND WORDS pographical appearance but for
FOR THE NEW MONTHLY its contents.

Some say that when they saw the announcement that there was to be a change from the semi-monthly they had misgivings; but they all say that after seeing the journal in its new form they are more than pleased. As it would be impossible to acknowledge all of these kind words by letter, it is only fitting that we express our sincere appreciation to one and all for the kind things said and best wishes for the future. The good opinions expressed about the monthly will serve to stimulate us to do better. Thanks again.

THE NATIONAL Beekeepers' Association will hold its annual convention at Madison,

Wis., on Tues-

THE NATIONAL CONVENTION d a y, Wednes-

day, and Thurs- day, Feb. 6, 7, 8.

The headquarters will be at Merchant's Hotel. The program came so late that we are unable to give it in full; yet it is sufficient to say that the program is strong, and a good one. The following will be the speakers: N. E. France, Platteville, Wis.; President Francis Jager; L. D. Leonard, Minneapolis; Dr. E. F. Phillips, Washington, D. C.; Dr. E. Dana Durand, Washington; Dr. S. A. Jones, Washington; Prof. H. C. Taylor, Wisconsin; Dr. Wm. Copenhauer, Helena, Montana; Prof. F. Eric Millen, Iowa; R. A. Burnett, Chicago; E. R. Root, Medina; Wesley Foster, Boulder, Colorado; Frank Rauchfuss, Denver, Colorado; E. D. Townsend, Northstar, Mich.; Geo. Williams, Redkey, Ind.; C. P. Dadant, Hamilton, Ill.; Hamlin B. Miller, Marshalltown, Iowa.



THE NATIONAL CONVENTION d a y, Wednes-

day, and Thurs- day, Feb. 6, 7, 8.

The headquarters will be at Merchant's Hotel. The program came so late that we are unable to give it in full; yet it is sufficient to say that the program is strong, and a good one. The following will be the speakers: N. E. France, Platteville, Wis.; President Francis Jager; L. D. Leonard, Minneapolis; Dr. E. F. Phillips, Washington, D. C.; Dr. E. Dana Durand, Washington; Dr. S. A. Jones, Washington; Prof. H. C. Taylor, Wisconsin; Dr. Wm. Copenhauer, Helena, Montana; Prof. F. Eric Millen, Iowa; R. A. Burnett, Chicago; E. R. Root, Medina; Wesley Foster, Boulder, Colorado; Frank Rauchfuss, Denver, Colorado; E. D. Townsend, Northstar, Mich.; Geo. Williams, Redkey, Ind.; C. P. Dadant, Hamilton, Ill.; Hamlin B. Miller, Marshalltown, Iowa.

IF THERE IS any place on the continent where co-operation could be made a success it would be

Ontario, Cana-

da. There is not a state nor prov- ince in America

where beekeeping is on a better com- mercial basis than in Ontario. The ter- ritory is not large, and the beekeepers, many of them in the business in a large way, have covered practically all the good bee ranges in the province.

Already they are co-operating in the mat- ter of prices, and we heard no little grum- bling on the part of a few because the committee have recommended too low a scale of prices. Some felt sore because they sold too early, and now they wish they had their honey back. On the other hand, the committee had prevented many sales being made too low; and so, taking it all in all, they help materially to stabil- ize prices.

THESE SEEMS TO BE a tendency on the part of some of the best beekeepers in the country to win-

WINTERING BEES IN TWO-STORY HIVES ter bees in two- story Langstroth hives. The gen- eral scheme is

this: The upper story is filled with honey, and the bees allowed to form a winter nest in this upper story. The lower story may or may not contain honey; but all combs partly filled should be put in the lower story. Bees put up in this form often winter well without any packing when the same cluster of bees in a single story would die. Heat naturally rises, and a clus- ter of bees will be in the warmest part of the hive, clear away from the chilling drafts of the cold bottom-board and the entrance.

It is apparent from certain outcroppings at the recent bee conventions that some bee- keepers have been wintering in two-story

hives without protection for some years with remarkable success, and yet the fact has not been generally known. Dr. E. F. Phillips, of the Bureau of Entomology, believes that the ideal condition in wintering outdoors is in two-story hives, two hives to a winter case.

Mr. Mel Pritchard, who has charge of two of GLEANINGS' apiaries, has been wintering bees in both single-story and double-story hives. He finds that bees in the latter come out in a little better condition than those in the former. There are two reasons that he assigns for this. (1) The double hives have a larger amount of stores, relatively, and (2) the cluster is clear up to the top of the hive away from the chilling drafts at the entrance. A colony that is "rich in stores" and in the warmest part of the hive well protected will winter if any colony will.



MR. FRANK COVERDALE, of Delmar, Iowa, says he prefers to have grass four or five inches



LONG GRASS long near the entrances of his hives. When a swarm comes

out with a clipped queen the latter will have difficulty in getting far away from the hive; and instead of running along on the ground and getting lost she will crawl up a spear of grass where she can be easily seen. The usual plan recommended is to cut down the grass short all around the hive, so the queen can be easily found, for a like reason. There is something in Mr. Coverdale's idea. Of course he does not recommend having the grass tall, for that would impede the flight of the bees to and from the hive.



BEEKEEPERS generally have the idea that, when they have amber or dark ex-



TRACTED HONEY, the only thing they can do is to sell it in a jobbing or

wholesale way to some large dealer. While this, undoubtedly, is the best policy for most producers, yet experience has shown that one who can sell a light-colored extracted table honey around home can also sell an amber; and, strangely enough, there is a certain trade that prefers it to the light-colored honey.

Some foreigners, accustomed to the dark

and amber honeys of their old homes in Europe, very much prefer the dark honeys of the country of their adoption. The light-colored honeys they sometimes characterize as "sugar and water," without any taste or flavor.

It should be remembered that Europeans make a large use of honey in their cooking, and that is one of the reasons why those in this country use the dark and amber honeys.

It is time to wake up to the fact that dark honeys in localities where there is a large foreign population can be sold from the doorstep and in the local groceries, in some cases, sometimes as readily as the light-colored, generally called "table" honeys. There are numerous instances on record where this is occurring, year in and year out. If Mr. Barelay, of New Jersey (see News Items) can sell his "blackstrap" or "bug-juice honey" at \$2.50 a gallon, the beekeepers who have a better quality of amber ought to find a local demand for their product.

We know of instances where some beekeepers are doing a very profitable business in selling their fall or medium grades of honey right at their own doorsteps, and are getting 20 to 25 cts. per lb. What some are doing, others can do.



AS ALREADY stated, we are wintering bees in three or four different ways—in

the cellar, by the QUADRUPLE WINTER plan, outdoors CASES in double-walled

hives, and in large winter cases four hives to the case. In place of a honey-board or super cover we are using sheets of glass in some of the big cases in order that we may more easily determine the size, location, and condition of the cluster.

Zero weather struck us on Dec. 15; and in the height of it, and in the midst of high wind, we have been noting the location and size of the clusters under glass. This was done by gently lifting up the tray containing planer-shavings, and pulling the shavings under the tray until the glass is exposed. A careful examination of a number of colonies showed the clusters were hugging the *inside* sides of the hives. In a number of instances the clusters were directly opposite each other in adjacent hives, and a distance from each other of only two $\frac{1}{8}$ -inch boards, of which the inner hives are made. It is apparent that the combined heat drew the clusters together. It is apparent, also, that the cold

wind and low temperature make the outside of the hive, notwithstanding it is surrounded by six inches of packing and ten inches on top, colder. It is apparent, also, that the two inside walls of the hives will be warmer than the two outside walls. Practice, in the case just mentioned, bears out the theory that the four hives placed in a group will have two inside walls that will be warmer than the two outside walls. Notwithstanding the zero weather and a pretty stiff wind, the clusters under the glass were not drawn up tight, but seemed to be perfectly comfortable and quiet. In one or two cases, where the clusters were evidently small in the fall, the ball of bees seems to be drawn together more tightly.

The moral of this is that bees in quadruple cases will have only two exposed sides while in regular double-walled hives they will have four exposed sides to the weather.



ONE OF THE LARGEST producers in New Jersey told how he wintered his bees

 **WINTERING BEES IN BARRELS** in asphalt-barrels, which he secures at a very low price. He lays the barrel on its side on a regular hive-stand, pushes his eight-frame hive back into the barrel, and then stuffs packing material all around the hive and in front, leaving a passageway for the entrance.

Not a bad idea. The same principle could be applied to cracker-barrels or other barrels that one can secure cheaply. They would need a covering of roofing-paper to keep out the rain.

Incidentally it may be remarked that a ten-frame hive won't go into an ordinary barrel unless the end of the barrel is cut off a few inches. Rather than do this an effort should be made to secure larger barrels.



MR. E. G. CARR, State Foul-brood Inspector of New Jersey, reported that a

 **INSPECTING THE MAN** good many failed to make a success of the Alexander or Miller treatment

for European foul brood because of the misconception as to what constitutes a "strong colony." Mr. Alexander, Mr. Carr pointed out, laid particular stress on having the colony strong. If not strong, it

was to be doubled up with some other colony until it was strong. "Dr. Miller," said Mr. Carr, "evidently has very strong colonies or else he could not produce such crops of honey as he does. A good many beekeepers think that a four or five frame colony is strong. It should have," he said, "at least five frames of brood and six frames of bees; and it will be a great deal better if the hive is boiling over with bees."

When we asked Mr. Carr the question whether he recommended the Miller ten-day queenless condition or the Alexander 27-day condition, he said, "That depends on the man. Before I recommend either treatment *I inspect the man*. If he belongs to the Dr. Miller class I tell him that ten days of queenlessness is enough. If he is out of that class I advise him to keep the hive queenless twenty-seven days and follow exactly the plan recommended by Mr. Alexander. If he is of the careless, ignorant class, and the disease far advanced, I advise him to burn the whole hive. It is very important to *inspect the man* before prescribing treatment."



THIS HAS ALWAYS been a perplexing question; but for the years 1917 and 1918

 **COMB VER-SUS EXTRACT-ED HONEY** it is still more perplexing — it is momentous if not serious.

Whether one should drop the production of comb honey, in view of the present market conditions, and produce extracted, is a matter that should not be settled too hastily. There are many factors, national as well as local, that should be carefully considered before a final decision is reached. We feel that it would be hardly wise or safe for us to make any recommendations as yet; but a careful survey of conditions may enable the intelligent reader, at least, to reach his own conclusions.

The editor has just returned from an extended trip thru the middle West and thru the East. We not only kept our eyes and ears open to see and hear everything we could get hold of, but we interviewed producers, large and small, and the large buyers in various markets, and here are some of the conditions that we have met:

1. First and foremost, we may say there is a general demand for all kinds of extracted honey. At first the market was chaotic. It gradually began to recover itself, so that now extracted honey is scarce and prices firm. We positively know that agents are scouring the West

Indies for some large buyers in the city of New York. When these buyers are interviewed and asked what they are going to do with this honey they will give out no information. They simply say that they want the honey and are prepared to pay cash for it.

2. The market is overloaded with comb honey, and prices are easy. A great deal of Western comb honey is found at some particular points in the East. Some of it has begun to granulate, or, as the saying is, "gone back to sugar." Some large wholesale grocery concerns loaded down with some of this product are trying to unload. Some dealers say they will never handle comb honey again. It granulated on their hands last year, and they will not be caught again.

On the other hand, there seems to be no complaint of Eastern comb honey, nor of Western honey that *does not granulate*. Much of this is moving off at fair prices. We have learned of some particular localities in the East where carloads of comb honey are in storage. If this could be held in liquid condition until next season there would need be no particular concern; but it is granulated.

It is but fair to state that not all Western comb honey shows this early tendency to granulate. Much of it will remain liquid as long as the Eastern comb honey. It is but fair to say, also, that Western comb honey, as a rule, will grade higher than Eastern comb honey. The sections are more evenly filled, are whiter, and the product is of good flavor. But because *some* Western comb honey granulates soon after cold weather sets in, that very fact adversely affects the sale of *all* comb honey. Some Eastern comb-honey producers are sore over the fact.

3. Large numbers of extracted-honey producers are making plans to produce a large crop next season. Or, if they produce any comb honey, they will run exclusively for extracted. These people are glad that they are not comb-honey producers. The present good prices on extracted, with the probabilities that they will hold for next season, look very encouraging.

4. A large number of comb-honey producers are going to change over to extracted. The present prices of the liquid product as compared with the comb have led them to feel that they can make more money producing the former than the latter.

5. A large number, and perhaps a very great majority, of comb-honey producers east of the Mississippi will continue to produce what they have been producing. They

have always had good prices, and the demand has been quite satisfactory. Then, moreover, they feel that the time will come when there will be a scarcity of comb honey and an overproduction of extracted.

6. The two past favorable seasons in the East, at least, with good prices, will induce a large number of backlotters and farmers to keep a few bees. They have seen what their neighbors have done in honey production; and, having discovered that bees pay a larger return on a given investment, will keep a few bees, and, of course, will produce extracted, because that requires less experience.

7. Two years ago there was an overproduction of extracted and an underproduction of good comb honey. Prices on the liquid article were sagging while those on comb honey were going up. Two years ago there was an overproduction of potatoes, with the result that some farmers became disgusted. They stopped raising potatoes entirely, and now they wish they had kept on with them.

The comb-honey producer, remembering some of these peculiar conditions of supply and demand, will reason that a large number of beekeepers will change over to extracted. If they will do as the potato-farmers did, there is a possibility that comb honey may have a very strong demand in 1917 and '18.

8. We are reliably informed that in some of the alfalfa districts and in the arid West there are a good many carloads of comb honey in storage seeking a market. There is a great deal more in the Eastern markets, and this is granulated on the hands of the dealer. In some of the alfalfa districts beekeepers are wishing they had produced extracted instead of comb; and some of them are already saying that they will produce extracted honey next season.

9. As Wesley Foster says in his department in this issue the cost of changing over from comb to extracted honey producing is no small item; but perhaps the time has now arrived when the production of alfalfa comb honey has exceeded its demand.

10. There is one thing the beekeeper should remember, and that is, that the business of bottling honey has been growing by leaps and bounds. The public is just waking up to the fact that honey is a really cheap food and a necessary one—a food that ought to be in every home like ordinary granulated sugar. It is now found in our large groceries as it never was before. Grocers will handle bottled honey when they will not touch comb honey. For this reason the demand for extracted will continue strong.

EVERY bee-keeper finds pleasure in agreeing with Elisha Gallup and G. M. Doolittle that "around the queen centers

all there is in apiculture." The breeding of bees for increased honey production has met with great success by many who have tried this interesting pursuit. The possibilities in rearing better queens is not always heeded by the beekeeper. The beekeeper who pays little attention to the requeening of his colonies systematically, is, as a rule, also not the beekeeper who realizes the greatest crops of honey and the greatest profits.

Breeding work has paid dividends thruout the plant and animal world. More attention has been paid to the breeding of livestock than to the breeding of bees. This is perhaps true because we have had more breeders of livestock that were specialists. However, with an increase of beekeepers, and fewer "keepers of bees," better bees, free from disease, will be the rule.

In the preparation of this paper it is not the intention of the writer to discuss the reasons for rearing queens—conditions under which they are reared naturally by the bees in swarming, supersedure, and queenlessness. Such a treatise would involve a large publication. For reference to such works, the reader is referred to Bulletin No. 55, Bureau of Entomology, United States Department of Agriculture, by Dr. E. F. Phillips, Ph. D., and Scientific Queen-rearing, by G. M. Doolittle. The intention of this paper is to present to the beekeeper and queen-breeder a slightly new method of rearing queens—a method very simple, yet more satisfactory than many when queens are to be reared on a large scale for a long period of time.

Two years ago the rearing of queen-bees was begun by the writer at the Wisconsin Agricultural Experiment Station. The queens reared were sent to beekeepers thruout the state in lots of five or less. It was necessary to place a limit on the number sent to each in order to make the work beneficial to all. Effort was made in particular to supply beekeepers with queens in European-foul-brood districts. It is expected that these queens will serve as a basis for better bees thruout the state. By rearing queens for his own colonies, a bee-keeper can improve his bees within a short time. A number of letters received from various beekeepers in the state go to show

REARING QUEEN BEES

Experiments in Starting Cells at the College of Agriculture, of the University of Wisconsin

By C. W. Aeppler*

that this is being done as rapidly as possible.

Various conditions have to be met in rearing queen-bees in different parts of the country. In

the northern states, such as Wisconsin, entirely different success could be expected if the same methods were used as used in Texas, and if conditions were the same. In the early spring, and sometimes up to June 15, cool nights are the rule. This is also usually true after the middle of August. Such conditions are detrimental in starting queen-cells by the Doolittle method. *In the early spring the Alley and Dr. Miller methods give better results under Wisconsin conditions.* When the nights are cool, cells started by the Doolittle method are largely rejected when started under ideal conditions during the day, if started by the systems usually advocated. It is the object of the writer to show clearly how success can be had under any conditions in this latitude.

In the two years of commercial queen-breeding at the Wisconsin Agricultural Experiment Station, and even before that time in a smaller way, it was the writer's privilege to carry on experiments to determine the most satisfactory ways in starting queen-cells under Wisconsin conditions. With certain modifications the method worked out would be made applicable to most parts of the country.

CONDITIONS NECESSARY FOR SUCCESS IN STARTING QUEEN-CELLS.

The greatest requirement in queen-rearing is the cell-building colony; secondly, the management of the cell-building colony; and the size, shape, and condition of the artificial cell cups.

EXPERIMENT WITH CELL-BUILDERS.

Not all colonies are cell-builders. More or less success may be had with any colony in accepting queen-cells, if strong in bees; but a good cell-building colony is not readily found. By a good cell-builder is meant one that will accept from ninety to one hundred per cent of the cells given it and do so every time.

Last spring about fifty colonies were tried out to determine which should be used during the season as cell-builders.

The usual method of placing the cell-bars in a super above a queen-excluder was

* Photographs by L. G. Gentner and C. W. Aeppler.

followed in these experiments. During cool nights such as exist in Wisconsin in early spring, and no honey-flow, it has been found that cells are often torn down by the bees, even after they are sealed over. Just how to overcome such difficulties was still a problem at this time.

Prepared bars of cells were given to each and every colony; and the six that accepted the most cells during these trials were recorded. A greater number of trials were subsequently made with these six colonies. The colonies were all about equal in strength, and were fed each evening during this period. At least a dozen trials were made, and finally the best two were selected as "cell-builders," and the others set aside to be used in "finishing" cells. Of these two colonies, one was about ten per cent better than the other. Let us look back a little. From the records it was found that both had young queens reared during the previous August. Both queens had been reared from the same mother, which was considered the best breeder in the yard the year previous. From these experiments involving the starting of several thousand cells,* it is concluded that a *young vigorous queen* is necessary to produce the greatest number of nurse-bees needed in a cell-building colony. It is usually conceded that bees are less apt to swarm if a young queen is present, yet an old queen could never be used in the cell-building colony to be described presently.

The number and value of the queen-cells that can be secured by the beekeeper depends entirely upon the cell-builders. This is the writer's conclusion after two years of experimenting on this particular point. We have all noticed that some mares will nurse a colt better than others; that some cows treat a calf kindly and will nurse it, whereas its own mother will not; that a certain brood sow can nurse twelve pigs better than another will nurse six. It is a question of individuality and behavior. We have the same conditions present in queen-rearing. Not all colonies are cell-builders. One will accept a batch of twenty cells and complete them all; another may not accept ten. It is up to the beekeeper and queen-breeder to determine to some extent at least which colonies it will pay him to use as cell-builders, the same as it pays the breeder of swine to determine which shall be his brood sows and which go to market. It is a business sense that prompts such action. We must specialize in order to succeed best. It is quite as easy to start one hun-

dred cells and have ninety completed as it is to have only twenty-five completed. As it takes time to make the wax cell cups, secure royal jelly, and graft larvae, one should endeavor to get maximum results. To use the words of David Rankin, "Make every seed, every second, and every cent count."

FURTHER PREPARATION OF THE CELL-BUILDER.

In this latitude it is scarcely possible to have queens fertilized before June 1. The number of drones present up to this time is small, and no nuclei should be made before then, for the brood is chilled during the cool nights. As soon as the cell-builders have been decided upon, stimulative feeding should be resorted to in order to have the colony in the best possible condition. To help the cell-builder, frames of sealed brood may be given from other colonies. By June 1 the cell-builders mentioned had each twelve frames of brood, and more hatching brood was given from other colonies in order to secure a greater number of nurse bees. All these preparations might seem out of place if the usual method of dequeening the colonies were to be followed in starting queen-cells. But it will be seen by the reader that this extra work is not in vain.

PREPARATIONS NECESSARY JUST BEFORE BEGINNING COIONY FOR ITS SEASON'S WORK OF ACCEPTING QUEEN-CELLS.

A bee-escape board should be taken and spaces cut out as shown in Fig 1. A piece of wire screen the mesh of which is small enough so that a worker cannot pass thru is exactly fitted in the bee-escape board. Just before tacking on the wire a double Porter bee-escape is inserted. After the wire is tacked on securely a hole is cut at the opening of the bee-escape and the wire soldered on completely around the opening to prevent any possible chance of allowing a passage for the bees. In using bee-escape boards prepared in this way the natural temperature of the colony is disturbed very little. A bee-escape board made entirely of wire is not so satisfactory, as it may sag more or less in the middle and cause trouble. A wood-and-wire queen-excluder must also be provided. An empty hive body is taken, and a one-inch hole bored in one end to one side, as shown in Fig. 2. A small alighting-board should also be nailed on to assist bees in leaving and returning to the hive.

Two days before the colony is to begin its season's work of accepting queen-cells the final preparations are made. Fasten the bee-escape board to the bottom of the

* Work done to be absolutely accurate; all these preparations perhaps not necessary ordinarily.

THE CELLS AFTER THE BEES HAVE STARTED
WORK ON THEM.

CELL CUPS READY FOR GRAFTING.

THE NUCLEUS HIVES
AS USED AT THE
WISCONSIN
AGRICULTURAL
COLLEGE.

"A YOUNG VIGOROUS QUEEN IS NECESSARY.
SEE ARTICLE
FOR A CELL BUILDING COLONY."

prepared hive body just described, making sure that the bee-escape board is *inverted*—that is, is placed in position just opposite the usual method. The reason for this will be explained later on. Remove the extracting super or supers from the colony, as the case may be, and find the queen. Remove all of the combs of sealed brood from the brood-chamber, and in their place insert empty combs. Place the combs of brood in the prepared hive body, making sure that the queen is left in the brood-chamber. If any combs of sealed brood are present in the supers, set them out against the hive. Shake the bees from most of the combs of unsealed brood into the prepared hive body which has the bee-escape board attached to it. Fill the remaining space left with more combs of sealed brood. See to it that the original brood-chamber is filled with combs of unsealed brood or empty comb, and attach an Alexander feeder. Place a queen-excluder over this brood-chamber and set the prepared hive body containing most of the bees and all the sealed brood on top with the one-inch entrance *opposite* the front entrance. This hive body will be more than filled with bees. The old bees will leave by way of the small entrance and return to the original front entrance of the hive.

ADVANTAGES OF THIS PLAN.

Queen-breeders all know that the greatest number of finished cells can be secured if the cells are started in queenless colonies. The great question that arose in the mind of the writer is, "How can a condition of queenlessness be had without in any way reducing the strength of the colony, or how can a condition of queenlessness be had without dequeening?" The procedure just described is the solution to the problem. If brood is present in a super, and a bee-escape board is inserted, some bees will pass thru the escape, but the brood will not be deserted. Consequently there is a sufficient force of bees present in the *brood-chamber* of the cell-builders at all times. It is known that young bees will pass into the supers quite readily, especially if the colony is strong. Consequently, each day a large force of nurse bees pass thru the excluder and bee-escape and find their way into the hive-body above, where the queen-cells are to be accepted. These young bees cannot return to the brood-chamber below; and knowing no other entrance than the small hole at the back of the hive body, they return to this entrance after they have become field bees.* The sealed brood in the

frames above the brood-chamber soon begins to emerge and this brood-chamber is "boiling over" with bees all the time.

FURTHER MANAGEMENT OF THE CELL-BUILDERS.

If the honey-flow has not begun, the cell-builders must be fed a little each evening. A separate Alexander feeder must be used for each half of the hive, care being taken to close all openings made in attaching the feeders. Every two weeks frames of *sealed brood* are taken from the brood-chamber and transferred above the excluder, filling up the space there left with empty combs. As soon as the main honey-flow is on remove combs of honey once a week from both hive bodies, filling the space left in the brood-chamber with empty comb and the upper hive body with sealed brood. Since there is always a large amount of empty comb present in the brood-chamber, the queen will be kept laying to her full capacity, and the colony also will have no intention of making preparations to swarm, even tho confined to one hive body. As the honey-flow draws to a close, the colonies should be fed in order that no risk be taken, and the maximum number of cells will always be accepted.

ADVANTAGES OF THIS METHOD.

Not all colonies are cell-builders, and by this simple plan the queen-breeders can confine his entire efforts to one, two, or three colonies during the entire season, and secure an ample supply of cells at all times. It may be well to state here that these colonies are not used to "finish" the cells, and this will be mentioned again in detail.

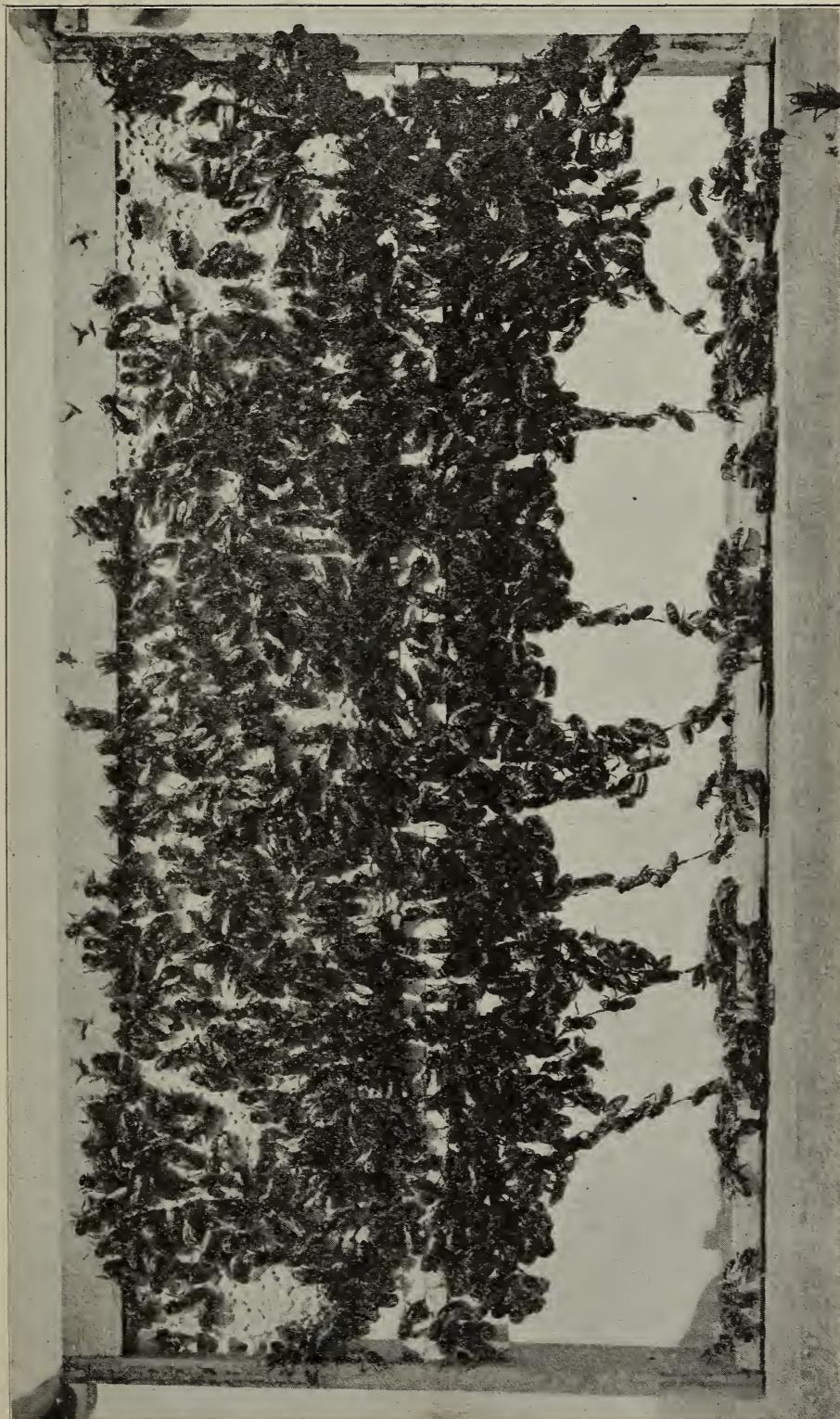
The upper hive body is always overflowing with nurse bees. The small entrance keeps the bees in a very crowded condition, bringing about the "swarming fever" at all times; but having no queen, they will never swarm. All beekeepers will concede that the best queen-cells are secured under such conditions. At times a peck or more of bees would be clustered outside around the small entrance at 7 A. M. During the middle of the day the entire back of the hive was sometimes covered. The great advantage and beauty of this system is that the cells are accepted *every time*, even during rainy weather and when the nights are cool. It does not seem to make any difference, and the cells are accepted *every time*.

PREPARING THE WAX CELL CUPS.

Heretofore it has been advocated by many queen-breeders that the artificial cell

* I will admit that bees will not pass nearly as readily up thru a bee-escape as down, yet some will

pass thru. But even tho not a single bee passed thru the escape-board the entire summer, the plan would work equally well.



Not all colonies are good cell-builders.

cups should be only about three-eighths of an inch in length. It has been the writer's privilege to carry on extensive experiments within the past two years to determine which size will give maximum results. Several thousand cells were started during this time, using various lengths and sizes of cell cups. Cells of different sizes and lengths were given to the same colony under various weather conditions and the results recorded. Cells were also alternated on the same cell-bars. The conclusions derived from these experiments are as follows:

The greatest number of cells are accepted and completed when seven-sixteenths of an inch in diameter and from three-fourths to one inch in length. (These sizes are for cell cups before being given to the bees.)

Cells three-fourths of an inch in diameter and larger were found never to be accepted, as well as cells under one-fourth of an inch in diameter.

Cells three-fourths of an inch to one inch long, and seven-sixteenths of an inch in diameter, were found to be capped over sooner than any other size. Little wax must be supplied by the bees, and cells of such size are therefore more inviting.

The cells are usually larger when completed than when drawn out from cell cups only three-eighths of an inch long.

The virgin queens that hatch from such cells are, as a rule, larger than from the smaller cells. Such queens are undoubtedly better fed, since more room for royal jelly is present in a large cell.

PREPARING THE CELL CUPS.

In preparing the cell cups the usual methods as given by Dr. E. F. Phillips and Doolittle may be followed. The only precaution to take is to get the edges of the cell cups *very thin*. If the edges of the cell cups are thick (such as machine-made cell cups) the percentage of accepted cells is not as great. This has been fully determined by the writer in experiments covering two years of time, and involving the starting of hundreds of cells. After the cells are fastened to the cell-bars they should be placed in a colony for polishing out. Care must be taken not to leave them too long, ten to fifteen minutes being a sufficient length of time.

STARTING THE QUEEN-CELLS.

It is not the intention of the writer to give directions for grafting larvae, etc., as this is very adequately described in the standard works on queen-rearing. However, the ideal conditions present in the cell-builders make the work more simple than usual. Not more than a portion of

royal jelly the size of a pin-head is necessary for each cell. In fact, one good-sized queen-cell will furnish enough of the jelly to start forty to fifty others.

Before placing the bar of cells in the cell-building colony, a cover should be made as follows: Take an ordinary Higginsville cover and cut it exactly in two lengthwise. Take a piece of wood about four inches wide and the exact length of the cover, and place its edges so that it will fit exactly between the halves of the cover when pushed together. The object in using a cover in sections is that, when the frame holding the bar of prepared cells is inserted in the center of the cluster, less disturbance is caused, and fewer risks taken in not having the cells accepted. One, two, or three bars of cells can be started at once; but undoubtedly better queens are secured where nurse bees can confine their entire attention to one bar of cells. When the brood placed in the upper hive body is practically all sealed over, the nurse bees can confine their entire attention to the one bar of cells given them, with the result that they are practically all accepted, or at least over ninety per cent for the entire season. By what other plan can the same results be realized? The beauty of it is that they are accepted *every time*.

In moving sealed brood to the upper hive body, it sometimes happens that two or three queen-cells are started from unsealed brood. If this happens they must, of course, be destroyed in order to prevent a queen from emerging.

At the end of twenty-four hours, the accepted bar of cells is placed in another colony to be "finished." After the cells are once accepted they can usually be completed very nicely in a colony above a queen-excluder. When the cells are "ripe" they are ready to be inserted in a nucleus, and the queens emerge there or can be placed in nursery cages.

It might be well to mention what success has been had by this method of using the Alley plan of starting queen-cells. The results are exactly as good. Early in June I had 42 queen-cells started on one comb using the Alley plan. The comb was cut in several places, and every other larva lifted out along the cut edges. On the lower part of the comb, or next to the bottom-bar, 23 cells were started, counting both sides, and 19 other cells started on the rest of the comb. Many other good results were had, but this particular instance was the record. As settled weather came on, only the Doolittle method was used.

DESCRIPTION OF NUCLEI USED AT THE WISCONSIN AGRICULTURAL EXPERIMENT STATION.

The nuclei hives, as designed by the writer at the Wisconsin Agricultural Experiment Station, provide for three nuclei in one ten-frame hive body. In Fig. 3 is shown these nuclei hives in actual operation. One entrance is had at each end, and one from the side. In the picture the middle nucleus is open while the other two are left closed. This is accomplished by providing for three inner covers that will exactly fit over the three compartments. In this way no mixing of queens or bees is had at any time. A regular cover fits over the inner covers at other times.

The so-called "baby" nuclei are not practical under Wisconsin conditions. This conclusion must be drawn after two years of work with them in this state. In the spring they are not populous enough to keep up a normal temperature during the cool nights; and after the first of August they are rapidly depleted for the same reason. Owing to the cool nights the three-frame nuclei have been found to give the most satisfaction. Since there are three nuclei in one hive body, the temperature is kept very constant.

The mating of queens is very uncertain during cool weather, and far more favorable conditions are provided for northern queen-rearing by using nuclei of the size mentioned.

There is also very little loss of queens in mating, as the entrances to the nuclei are all on opposite sides of the hive body. Another advantage of the three-frame nuclei is that they are always very strong, and can be kept so with ease. At the end of the season, if several are united they build up into fair colonies and can be wintered successfully.

RECORD OF CELLS.

In order to give the reader a better conception of the success that has been had by using the methods here outlined, a portion of the record of the two cell-building colonies used at the Wisconsin Agricultural Experiment Station during the season of 1916 is here given. It will be seen that the results are very uniform, and that, if an average were taken, it would be found that a total of more than ninety per cent of the cells were accepted during the entire season. This record takes into account cool nights when the temperature was very low outside the hive and rainy weather. On one or two occasions the bees did not enjoy a flight for two

days, yet the cells were accepted as well as under the most favorable conditions.

| Date | No. cells started | No. cells accepted and completed |
|---------|-------------------|----------------------------------|
| July 1 | 16 | 15 |
| July 3 | 16 | 14 |
| July 6 | 16 | 16 |
| July 6 | 16 | 12 |
| July 7 | 16 | 13 |
| July 7 | 16 | 15 |
| July 7 | 16 | 12 |
| July 8 | 18 | 16 |
| July 8 | 19 | 19 |
| July 9 | 18 | 15 |
| July 9 | 18 | 15 |
| July 10 | 13 | 12 |
| July 10 | 13 | 12 |
| July 11 | 18 | 16 |
| July 11 | 14 | 14 |
| July 12 | 18 | 16 |
| July 12 | 18 | 16 |
| July 13 | 18 | 17 |
| July 13 | 18 | 18 |
| July 14 | 18 | 17 |
| July 14 | 18 | 16 |
| July 15 | 18 | 16 |
| July 15 | 18 | 16 |
| July 16 | 18 | 14 |
| July 18 | 18 | 17 |
| July 19 | 18 | 15 |
| July 19 | 18 | 17 |
| July 20 | 18 | 18 |
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Results for August were similar.

FINAL CONCLUSION.

The method for rearing queen-bees that has been here described is applicable just as well to the man who owns a few colonies, operates large apiaries, or makes a business of queen-rearing from a commercial standpoint. It will appeal to the beekeeper who owns only a few colonies, in that he is never compelled to dequeen a colony to secure cells for requeening or making increase. To the extensive beekeeper it means time saved. The professional queen-breeders can confine his entire efforts to a few colonies; whereas, heretofore he was obliged to use a large number of colonies throughout the season in order to obtain enough queen-cells to supply the many nuclei he operates. This method of

obtaining desirable queen-cells ought to find a ready welcome in the practices of American beekeepers.

Later.—In looking over some of the back numbers I find an interesting discussion, Oct. 1, 1916, in which Mr. Kenneth Hawkins finds fault with the methods used by some queen-breeders because they use queenless colonies and so have a large number of them on hand during the season that store little or no surplus. Mr. Hawkins also says that such colonies develop laying workers soon and are, therefore, useless.

To this I should like to say in connection with my plan, that neither is true, but that a colony operated as a cell-starter or cell-builder in the way I have described will yield among the maximum of surplus honey, and not develop a single laying worker all summer. While Mr. Hawkins' method is better than some, yet I cannot quite welcome it, since he does not know that the young bees that he shakes from another colony come from a queen whose progeny are cell-starters or cell-builders. I have proved pretty well that every colony does not have those characteristics, even tho subjected to the most favorable conditions. If the queen-

breeder finds a colony that is a good cell-starter he should keep that colony intact; for to dequeen it would be a shame when we can use more satisfactory methods.

As I see it, not considering the essentials of a good breeding queen, the four greatest requirements in starting queen-cells are as follows: 1. Crowded conditions; 2. Young nurse bees; 3. High temperature; 4, Incoming nectar or its equivalent. All these conditions are provided by this new plan, and one or two are lacking by any other that I have any knowledge of. I will admit that in the South fewer failures would be had than in the North, on account of conditions here. When I thought out this plan and experimented with it I had Northern conditions in mind entirely; for to have cells torn down during cool nights is very discouraging. I speak now from the standpoint of the queen-breeder who wishes to start queen-cells for several months. Where a man wishes to rear only a few dozen queens he would not experience much trouble if he used any standard method; but because of the short honey-flow we enjoy, and the adverse weather conditions at times, I worked two years to perfect this plan.



IN Baltimore County, Maryland, 18 miles from Baltimore, is a man who loves bees and believes that beekeeping pays, and no wonder. A poor man,

starting with one hive and gradually building up, he has learned to produce and sell comb honey and make much more than a living at it. With his honey money he bought an apparently worthless piece of land, planted a peach-orchard on it, and built a shanty in which he lived alone for years. He then constructed, with his own hands, farm buildings and a modern home to shelter the young woman who, of all others, was waiting for him. Now with a wife and two small children he is prospering as never before.

The interior of their home suggests that of the well-to-do town or city man. Here there are no milk-utensils to wash nor any suggestion of the cow-barn nor the early rising and other disagreeable features that often go with certain work on a farm. Bee-work and fruit-raising are comparatively clean work, But has there been no

A MARYLAND BEE-MAN

A Poor Man Starting with Only One Colony of Bees Wins a Farm, Home, and Family

By Samuel Cushman

hard work done? Oh, yes! and lots of it. Years of lonely persistent work and much self-denial and economy have been practiced to attain these re-

sults in this line of rural industry.

The bees, however, made all this possible. They have been the main dependence, and are today; yet this beekeeper has never had as many as 200 colonies. He does not rear queens to sell. He rarely sells a hive of bees. He has never produced extracted honey. He does not receive retail prices. Comb honey sold thru a commission man has been his revenue producer. The returns from fruit never have been more than half of his income.

How did he do it? What methods have been followed? It is an interesting story. Follow me carefully and you will know. If he has done all this with bees, others, in the right location, can do it also.

STARTS WITH FRAME HIVES MADE FROM STORE BOXES.

Mr. N. W. James was living with his father not far from his present home,

28 years ago, when he first secured a poorly made Langstroth-frame hive of bees. At this time he knew nothing of bee books and magazines, and did not see any for three or four years, nor meet any up-to-date beekeepers. After that he had Root's *A B C of Bee Culture* and took two magazines—*GLEANINGS* and the *American Bee-keeper*—and has read them ever since. They and his own experience taught him about all he knows about bees. He did fairly well with this one colony for several years, securing from 25 to 50 lbs. of comb honey per season. Then, being without capital, he made hives from store boxes and began to increase. In six years he had worked up to 40 colonies and lost 20 of them the following winter. As the location was low and sheltered, he had previously suffered very little winter loss. This caused him to study beekeeping in earnest.

CLEAR LAND AND LIVES ALONE IN SHANTY.

While producing honey on his father's place he bought, with honey money, a piece of land, not far away, covered with blackberry bushes, briars, and stumps. He cleared this land and planted a peach-orchard and built a two-story shanty, 12 x 16 feet. The ground-floor room served as a living and work room, and here he cooked his meals on a kitchen range. He slept in the room above, reached by a ladder and thru a trapdoor. This original building now serves as a workshop and honey-room. An outside stairway now gives more convenient access to the upper room. This building as well as the others was the work of his own hands except that he had the assistance of a carpenter in raising the frame. The material of this building cost \$100. When completed he moved his 50 colonies to the place and made this his home.

LOST 100 COLONIES FROM FEEDING TOO THIN SYRUP LATE IN FALL.

He had been keeping bees for ten years, and, the season before, had increased to 110 colonies and bought 40 of a neighbor, and was obliged to feed winter stores to all. He did not know that he should feed thick

syrup in late fall. He had increased too much, fed thin syrup too late in the season, and lost 100 colonies before spring from dysentery; had only 50 left to move to the new farm. This was a hard blow, but it did not stop him. In two years he had, with the hives and old combs, built up again to the same number, and started an outyard. He has since bought 11 colonies of his father. He dug his well and built the other farm buildings and his modern home at a time when there was no bee-work to do. That is, he did everything but mason work for the house foundation and the plastering, and had assistance in raising the frame. He did his own carpentering, lathing, finishing, and painting and papering. He had not worked at either trade, but just picked it up.

PEACH CROP HELPS.

With him the peach-trees gave a crop the third year after planting. They yield four seasons and then die. The income from the peaches, sold right on the place, has never been over half that from the bees. The latter have given more reliable returns than peaches.

FIVE BARRELS OF SUGAR FOR WINTER FOOD.

Occasionally the honey-flow is only enough, after surplus is removed, to breed bees, and all colonies will require feeding for winter stores. In the fall of 1915 he was obliged to feed five barrels of granulated sugar at a cost of \$100, to carry the colonies thru the winter. All but two of the 162 colonies were alive in spring; but a few were queenless and had to be doubled up, leaving 155.

GAINS THREE AND A HALF TONS OF COMB HONEY AND 35 NEW COLONIES.

In 1916, from 155 colonies, spring count, he took off 6500 lbs. of comb honey and now has 190 colonies—a gain of 35 colonies and 3½ tons of comb honey. His best grade comb honey netted him 15 cts.; second grade 13, and culls, unfinished and dark, 11 to 12½ cts. per lb., an average of 14 cts. Last fall no fall feeding was required, as all colonies filled up from an





N. W. James and family.

extra good flow from fall flowers—golden-rod and asters. It will be interesting to know how these got thru the winter.

OBLIGED TO GET ITALIANS.

Formerly he kept black bees and preferred them because they capped their honey whiter; but European foul brood forced him to keep Italians. He secured some of the best Italian stock, and found a great difference in the various strains of Italian bees. Some queens gave workers that were great honey-gatherers and very gentle, but they built comb-cappings against the honey so it partly showed thru. He now prefers bees that have a little black blood, the progeny of an Italian queen that has mated with a drone from hybrid stock or Italian and black mixture. These are usually gentle, and easy to handle. Occasionally there will be a cross colony, but he requeens these. He usually uses swarm-reared queen-cells from the best old colonies that have cast a swarm, but does not requeen good colonies, no matter how old the queen, if they are doing well. He has some queens that are two and even three years old.

AVERAGE YIELD PER COLONY.

He has averaged about 50 lbs. of comb honey per colony, spring count, for the past five years, and always sells his crop thru a commission merchant. He does

not risk shipping it by freight or express, but drives to Baltimore with it just as soon as he can prepare it for market.

TWO GOOD SEASONS TO ONE POOR ONE.

He counts on having two good seasons to one poor one in his locality or by his management. He believes in preparedness, and that doing the right thing too late has turned a good season into a bad one for many a beekeeper.

EIGHT-FRAME DOVETAILED HIVES PREFERRED.

Mr. James has been buying factory-made hives, eight-frame dovetailed, for the last 15 years, as it does not pay to make up hives from the lumber. If he were to start over again, however, and had no capital, he would make over store boxes again at the start.

He had run one home and two out apiaries for four years before coming on to the new place. He now has one out-apriary of 89 hives and 101 colonies in the home apiary, but will take part of the latter to a new outyard next spring.

OVERCAME FOUL BROOD.

European foul brood, which affected his apiaries eight years ago, disappeared after he requeened them in the fall with Italian queens or ripe queen-cells, after first making colonies broodless for ten days or two weeks. A few seasons later, 20 colonies showed it again in the spring; and still later one or two black colonies had it, but it has not reappeared since. He does not consider it a serious menace to the careful beekeeper, and believes that it will not injure even the honey crop if prompt measures are taken.

HARVESTING THE CROP.

He secures his comb honey in $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$ -inch sections with two beeways. He does not like either four-beeway or plain sections nor the $4 \times 5 \times 1\frac{1}{2}$ -inch style, as combs are more likely to be injured in cleaning and crating. His commission man also advised him to stick to the kind he had been using, as they suit his trade best.

These are put on the hives in regular S supers with slatted wood separators, and three are used to a hive. Foundation starters, cut 2×3 inches, are used in the sections, instead of narrow strips. These, hung long way down, give three sides to work on, while a narrow starter gives only one edge. These will be built out as fast as full sheets. These supers of sections are all ready for the season's crop several weeks before the surplus flow, and one set is on the hives one week before it commences, and ventilation blocks are put under the

brood-chamber, one at each corner. The first supers given always contain one or two rows of bait combs, sections having full combs or foundation well drawn out, left over from the previous year. These are sometimes moved to the outer rows after work in them is well started. When the first super is partly filled, another super with foundation sheets is put under it, and later, before the height of the honey-flow, another under that; but when the honey-flow is diminishing it is put on top. As soon as two-thirds of the sections in the first super are capped over it is removed and the unfinished ones are put back in another super. In removing supers of finished sections the bees are not smoked out nor brushed off from the supers. Porter bee-escape boards are used to clear the sections from bees, the finished supers being placed at the top, and the escape beneath it to allow the bees to return to the colony of their own accord. Bees that pass thru these escapes in only one direction can go out but cannot return.

FUMIGATES THE COMBS.

The combs are then fumigated with sulphur to kill bee-moth eggs. He prefers

that to bisulphide of carbon. The latter does the work all right, but is highly inflammable.

DOES NOT TRY TO STOP SWARMING.

Mr. James does not clip the queen's wings nor try to stop first swarms. He expects them and two-thirds of his colonies to swarm. He watches closely for them at the home apiary between 10 and 12 o'clock during the swarming season. They usually settle on a limb and hang half a day before going off. He then spends one hour at the out-apiary to hive those that are out, and returns to the home yard in time to get the afternoon swarms. Sometimes they hang from afternoon until the next morning. This ties him right up to his apiaries in good weather during swarming time. He rarely has a swarm go off. Some come out as late as 2 o'clock on very warm days, but usually not often after 1 o'clock. He often has to climb trees to secure the swarms. The limb they are on is partly sawed off near the tree; and as it breaks half thru and swings down he can reach, cut off, and descend with the branch having the swarm.



One of Mr. James' apiaries in a forest.

PLACES NEW SWARM ON THE OLD STAND.

He hives them in a new hive placed on the old stand and puts the old colony on one side. The surplus-honey supers are transferred to the new swarm on the old stand, which will receive all the working force. In one week he moves the old colony to the other side of the new swarm, to give more of the workers to it. Very seldom do second or after swarms issue from the old hives unless he lets them stay too long without moving. He does not have to open old colonies nor bother about queen-cells, as they are so weakened that the first queen hatched is allowed to kill the rest.

GETTING RID OF DRONE COMB.

Sometimes he hives the new swarms on brood-frames hatching foundation starters, altho he prefers full sheets of foundation and one or two drawn-out combs. When starters are used, and if some drone comb is built in the frame, it can be cut out with a can-edge cutter, and worker comb cut in the same way fitted in to replace it.

NO QUEEN-EXCLUDING HONEY-BOARDS USED.

Large heavy swarms are given double brood-chambers in very hot weather, which are left two or three days; then supers are put on and one brood-chamber taken away. Plenty of ventilation and room are given the first few days. He has never used the queen-excluding honey-board, and has had no serious trouble with pollen or brood-rearing in sections.

YARD IN FOREST-CLEARING DOES BEST.

Mr. James' outyard, two miles from his home, is located in a small clearing in a forest of small trees, and within sight of a dwelling. This place is warmer and more sheltered from the wind than the home apiary. Here the bees fly out earlier in the spring and later in the fall with safety. A hundred yards away, below it and under a steep bank, sloping to the south, is a small brook to which the bees have easy access. In spring they are found lined up by the hundreds at one time, taking water, and they fly back and forth thru the trees out of reach of cold and wind. They always come out in spring in better condition than the home apiary, which is on a bleak hill.

IMPORTANCE OF NEAR-BY WATER SUPPLY IN SPRING.

The importance of having water within safe distance at that time is realized by Mr. James' remark that his home apiary, at that season, takes a gallon a day from a water-fountain placed among the hives.

The danger of spring dwindling would evidently be much greater if they had to fly half a mile or more, exposed to chilly winds to get water. He has fed ground wheat out in the open in early spring as a substitute for the natural pollen, and favors it.

SOURCES OF SURPLUS HONEY.

His first surplus is secured from locust blossom, which commences about May 15, or about two weeks after apple blooms. The bloom from the tulip or poplar tree follows, or blooms about the same time. White clover commences to bloom about May 25, and lasts thru June and into July, altho none is stored in sections in July. Considerable honey is gathered from daisy blossoms; but the yellow-daisy pollen brought in with it colors the finished white-clover sections unless they are removed promptly.

A CORNSTALK WINDBREAK.

The home apiary is on a slope somewhat under the hill, and sheltered on the north by a thick wood. A rail fence on the edge of the wood and around one corner of the yard on the west has been made to serve as a windbreak by standing up bundles of cornstalks thickly against this fence. As Mr. James observed, this was not much for looks, but "handsome is that handsome does." Here the hives are five or six feet apart, and the rows about eight feet from each other.

TAR-PAPER COVERING FOR WINTER.

When colonies succumb in the winter here they have been those furthest from the forest and windbreak. Those in this part of the yard have, besides the half-story of chaff on top, a covering of tar paper tied around with a cord. This protection has given very good results in the past on a few hives, and will be tested out this winter on a larger number.

KEEPING A LARGER NUMBER.

I asked Mr. James why he did not have more colonies. He replied that he gets about enough to do, without help, with what he has, and wants to change off on other work. He is about exhausted at the end of the honey season.

I asked if he could not save the time taken watching for swarms, and avoid climbing trees for them, by clipping all queens and making all swarms artificially by shaking or brushing, thus leaving them in about the same condition as after natural swarming, and in this way save work and time, and then take care of more colonies. He has never tried this but intends to on an outyard next season. Asked if he con-

Continued on page 150.

THE question of out-apiaries and their desirability may be looked upon from many standpoints, and yet the experience of any one

beekeeper must of necessity be limited. Localities vary, seasons vary, the bees vary, and perhaps, more important than all, the beekeepers themselves vary. I am running seven apiaries, and in a good season there are enough bees to satisfy the desire of a pretty ambitious man. On the other hand, if the season is poor I have far more bees than enough, and the poorer the season the worse off I am, and the greater the loss. It is still a question in my mind if, instead of extensive out-apiaries, it would not be more profitable for a beekeeper to own his own home and ground, to keep several cows, a limited number of chickens, to have a good garden supplying first-class vegetables — enough for his own use and some besides — then have his bees on the same place where they can be cared for at the least expense. There is a great saving in labor and time in having the bees in one place, and that in the home apiary. Time and again there are things that I should like to do or to look after that are impossible because I am not on the spot, and conditions might change by the time I could get there.

If the beekeeper is isolated from other bees so that there is a range of, say, two miles in every direction, and if he is in a good locality, I doubt whether it pays to split up an apiary short of 200 colonies. In saying this I take it for granted that the readers of GLEANINGS all know that overstocking is felt particularly at the time that the bees are building up for the surplus honey-flow — in this locality, during the blooming of soft and hard maples, dandelion, and fruit.

THE COST OF THE GROUND.

In establishing an out-apiary some rent or its equivalent must be paid for the location. I know that locations are sometimes offered rent free. I have had such offers, but have never accepted them. In any event it is not a legitimate way of calculating the expense of the undertaking. It may be foolish for me to mention what I pay a year for enough space to put an apiary. Some may say it is too much, others that it is too little. I pay \$20 a year for a suitable place to put an apiary, preferably an apple-orchard, and for a place to extract and store supplies. I never agree

OUT-APIARY EXPENSES

The Importance of Keeping the Most Accurate Account of all of the Necessary Overhead Costs

By R. F. Holtermann

to give away any honey; but if I get a fair crop the owner of the land gets 60 pounds of honey, or sometimes even more.

THE COST OF TRANSPORTATION

A conveyance must be supplied, and a conveyance costs something. If one has horses he must keep track of the time used and divide the cost proportionately — so many days in the garden, so many days for the bees, so many for family use, etc. I enumerate every outlay, expenditure, and returns. Merely to say that I have a conveyance anyway, so it costs me nothing, is not sound business reasoning. It would be like charging the first boarder for rent, heating, and other overhead expenses, and then figuring the cost of the other boarders merely on the amount of food consumed.

The cost of running an automobile varies considerably. I think that many, in their desire to tell a good story, inadvertently deceive themselves and others. Some drivers can smash an automobile in five seconds and never know it. Another can run them for five years and never have an accident. I have found that with an auto it is necessary to attend at once to anything that goes wrong. This is a good rule to follow with any machinery. There are no superfluous parts about a good machine; and therefore if only one screw or bolt is out of commission it means added strain on some other that is not expected to do double duty. If I pay \$1000 for an auto I must charge \$60 a year interest against the business, and also a further charge to take care of depreciation in value. How much does an automobile depreciate in value in a year? The question is not so much what my opinion is, but what the value of the machine is on the open market. A \$1000 machine with average wear will usually depreciate in value \$200 or more in a year. I bought a machine that had been used for demonstrating. It had an exceptionally good engine. The price when new was \$1200; but after it had been used one season for demonstrating I paid \$850 for it. In this way I did not lose the first great depreciation. The machine is run mainly on stiff clay roads. The country is fairly level; but when wet the roads are dreadful, and at times almost impassable. This is a serious handicap for automobile travel — very hard especially on the tires, because the ruts, when dry and hard, cut the rubber badly. We have used up four or five outer cases every season

since we have had the machine. Five last year cost us over \$150. Then there is the gasoline, oil, overhauling, and other repairs. There is no use in underestimating this kind of expense. Many do; yes, some business men always underestimate the costs in their business. But unless these expenses are put down accurately the cost will be underestimated.

It takes some time to go back and forth to the out-apiary. We have a truck of 1500 pounds capacity, which cost when new \$1200. I bought it after it had been used three seasons by a grocer in the city, paying \$750 for it. It is very valuable for a short time in the season for out-apiary work, but it scarcely has enough to do to distribute the costs connected therewith. Furthermore, it takes a good deal of gasoline and oil to run it. However, it is certainly a fine thing to be able to back into an apiary and feel sure that the bees can make no trouble.

CONVENiences AT HOME YARDS.

Snowstorms, windstorms, varying winds and changes of temperature, especially in the spring, all demand changes in the apiary, or possible changes. Entrances may need adjusting perhaps even twice during the day. If there were only one apiary, and that at home, and run on a plan to prevent swarming, the chance for a swarm to issue would be so small that it would not be necessary to examine the combs regularly for the queen-cells. Six days in the week I should be on the ground to catch any swarm that might issue. In case of out-apiaries which I can visit only one day in the week it is an entirely different proposition.

In the spring, when the buds begin to swell and the bees fly almost every day, if I had a home apiary only I would put out a

large feeder containing syrup made of ten or twelve parts of water to one of sugar so the bees could help themselves quietly and yet not get excited.

This plan can not be followed at out-apiaries, for a "greenhorn" can not do such work as a rule. Then with the out-apiary there are the queen-cells to look after. If there is only one apiary, the beekeeper, being constantly near it, knows what is going on, and is in much closer touch with his business.

MANAGING THE OUTYARDS.

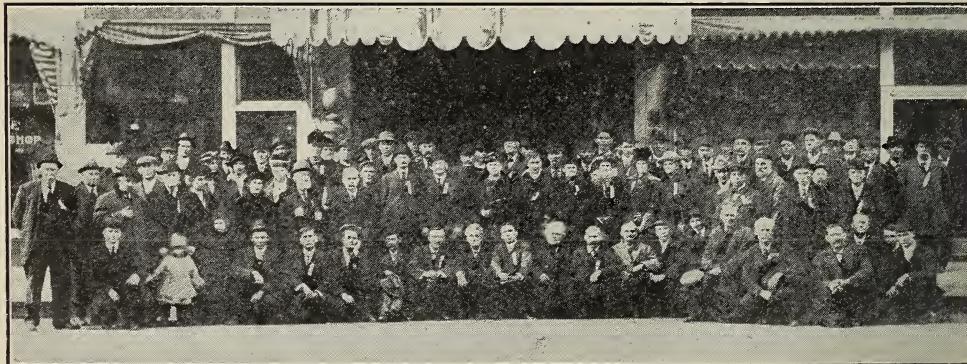
When it comes to the management of out-apiaries I like to have the bees packed on their summer stands four in a group, leaving the packing on all the time except during hot weather. The entrances may be in any direction if the yard is sheltered from the winds; but it is best to have the front of one group face the sides of the next group in order to prevent drifting and help the bees in locating their own hive.

I much prefer shade during the hottest part of the day. Apple trees properly pruned are excellent for this purpose.

Large hives, which, if necessary, can be contracted with a division-board, are my preference. I use a 12-frame Langstroth hive. I do not want to crowd the bees too much, particularly during the early part of the flow. Large entrances at the proper time are necessary in my management.

In conclusion I can say that out-apiaries complicate the work very much and increase care, responsibility, and anxiety to a thoughtful person. With so many bees left alone or with only novices about, having oftentimes poor judgment, I often feel very anxious during critical times.

Brantford, Ontario.



Iowa Beekeepers' Convention, held at Des Moines, December 5 and 6.

SOME little time ago the editor happened to make some favorable comment concerning our special correspondent Mr. J.

L. Byer, of Markham, Ontario, Canada; of how he had started in his apicultural career from the bottom round of the ladder until he was now one of the largest and best beekeepers in all of Canada; of how he had raised a family, sending some of the older children away to school. He came back with a private letter saying that he did not deserve the good things we had said of him; that his beeyards were not models of neatness, and that he had all kinds of hives and equipments; and he was afraid that after the puff given him some of his fellow-countrymen would call on him and go away feeling disappointed. As to "having raised a family," Mr. Byer said it was somewhat of a joke, as he is still raising one, a pair of lusty twins having come to his home about six months before the time of our visit.

This letter of protest about a heterogeneous lot of hives from our correspondent made us all the more anxious to see the man at his home and yards; and so, accordingly, after a preliminary conference with the attorneys in the case of the beekeepers versus the smelters at Thorold, Ontario, we took occasion to run up to Mr. Byer's place. We had given him no previous intimation of our coming, and so we called him up from Toronto on the long distance to see if he were at home. "Sure enough, I knew your voice," he said. He was surprised but yet pleased to know that we were coming up to see him. He met us at the train with his Studebaker—a comparatively new machine, and took us out to his home lickety-splash, for the roads were wet and muddy.

Mr. Byer is now living in a brand-new house with all modern conveniences and equipments. The bees, the automobile, the home, were all paid for out of the proceeds from his bees. Perhaps our correspondent will not thank us for saying this much; but it is only fair to say that his beekeeping is of a kind that spells success.

When we expressed a desire to see his beeyards he readily assented to taking us out, but remarked that we would not find things looking as nice as at Medina.

"Never mind," we said. "You have apparently made a success of the business."

We went out to the Cashel yard, about four miles away, and we found it, as Mr. Byer had said, provided with hives of all

J. L. BYER, THE BEE MAN

*How Success has Come to a Man
Without Capital but with Abun-
dant Energy and Enthusiasm*

By E. R. Root

styles—some that he had bought up of beekeepers at various times. The frames at each yard are all of a size however. While he endeavors to keep each

equipment of a kind by itself, it was not possible for him to do that in all cases. The bees in this yard were packed in double-walled hives, one colony to a hive. He admitted that the quadruple case for holding four hives was all right, but it took a long time to pack the bees in such cases, and he rather preferred the individual double-walled hive and the two-hive winter case. Over half of his bees are packed two in a case.

Fig. 1 shows the Byer hive that had been made by his grandfather. Bees wintered in them well, notwithstanding there was only two inches of packing between the walls. He uses absorbents; and in looking into some of the hives we found the bees were in fine condition with an abundance of stores.

"But," we remarked, "don't you think you would use less stores if you used more packing?"

"Perhaps," he replied. And then he said he had about 25,000 pounds of nice clover honey on the hives slightly flavored with buckwheat for which he could get 8½ cents a pound. He admitted that he might be able to save some of this honey, but it would mean an entirely new equipment and some extra labor in packing and toting these big hives around from yard to yard. He was not sure that he would care to change. Mr. Sibbald, he said, who was credited with being one of the best beekeepers in all Ontario, was using the Alpaugh-Holtermann winter case, and liked it.

The reader's attention is directed to the style of cover, which is made of common shingles and a 7/8 piece to make up the ridge-board—very simple; see Fig. 1. Mr. Byer is inclined to think that sheet metal as shown in the foreground, Fig. 3, is cheaper.

The Cashel yard that we were visiting was nearly surrounded by a windbreak of woods. A large amount of alsike is grown in the territory, and the location is ideal.

In the afternoon we drove over to the Markham yard, located on Rouge's Hill, a little way outside of the town itself. There is hardly a prettier location in all Canada. It is at this yard that Mr. Byer and his friends sometimes hold picnics.

Fig. 2 and 3 are general views of this

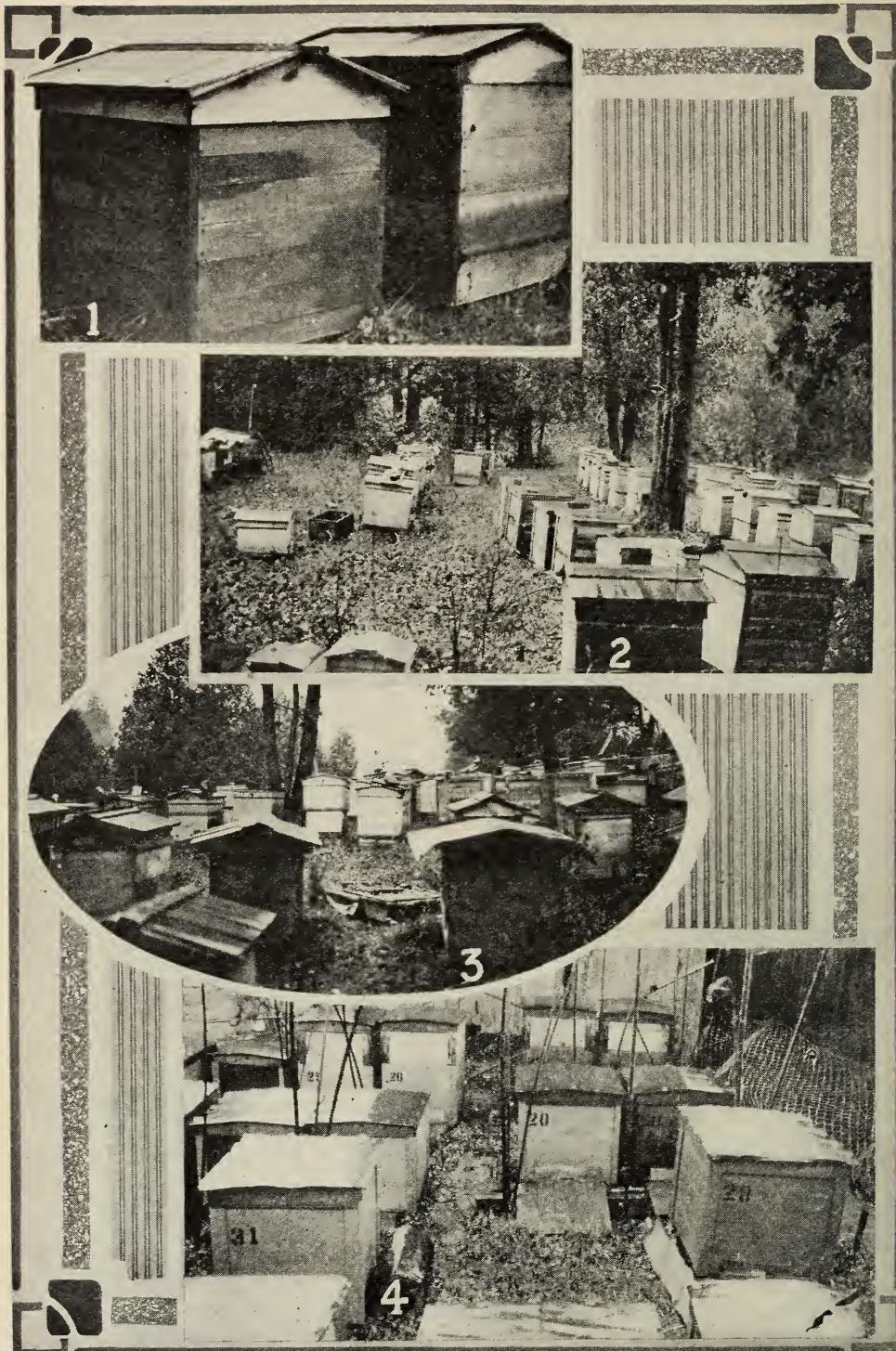


Fig. 1.—Byer's double-walled hive. The cover is made out of common shingle. Fig. 2.—Byer's Rouge Hill, near Markham, Ontario, Can. Fig. 3.—Another view of the same yard, showing the flat tin roofs in the foreground. Fig. 4.—C. W. Hellen's apiary from a start from pound packages. With 17 pounds of bees, each with a queen, he secured 1800 lbs. of honey and left the nice little apiary ready for winter.

particular yard. About the same kind of hives and equipments are used for all the yards, so a view of this apiary will serve to show them all. The reader will notice that there is nothing particularly dilapidated in this yard, which is a fair sample of all of them. The main thing is that the colonies are all in fine condition. Regular Jumbo hives are shown in the foreground, with others of a different type in the background. Mr. Byer is using eight and ten frame Langstroth hives, and also at his Cashel yard hives even deeper than the Jumbo. He therefore has an excellent opportunity of comparing the relative merits.

We have asked him to tell in one or more articles of the good and bad points of all his hives. He admits there are some peculiar advantages in favor of the Jumbo hive, both for the production of honey and for keeping down swarming. The entrances of these big hives, however, were about 1 x 3 inches. When we asked him if the mice did not bother him he said they did not, because he kept strychnine scattered around in each yard. We asked if it would not be an advantage to have larger entrances as recommended by the Dadants.

"Perhaps" was his reply. But he has not had any trouble from these entrances.

It is true that Mr. Byer started in a small way. He bought 27 colonies, giving his note for \$108.* He wintered 23 of them successfully, procured a crop of honey, and, after paying off the note and putting his bees into winter quarters, he had \$110 left. With this amount as a beginning he "bought more bees" and has been buying and making increase ever since, until now he has something over 700 colonies, and colonies they were, mind you. He gives his wife credit for much of his success, as she has been a good home-maker and has put in many hard days with the uncapping-knife.

The past season was Mr. Byer's best. He is not giving out to the public what he did; but we will say this: A man must be something of a beekeeper who can take the equipment that he has, consisting of big and little hives, some of them thirty or forty years old, and get the crop he did and does get from year to year. While location, no doubt, plays a very important part in this case, the hives could not and would not do it. We must, therefore, give credit to the man and his methods.

MANY eastern people are coming into the San Joaquin Valley of California each year, and many more would come if they were assured of a living. Not every one is adapted to the bee business as a single source of income; but thousands more colonies could be profitably kept by diversified farmers if they but realized the fact.

Bees are not only profitable on the honey count but are of inestimable value to the great orchards thruout the country, yet there are orchards of many thousands of trees in this valley with no bees at all, and many more with only a couple of hives. To be sure, the orchardist himself has little or no time to attend to them; and if any are kept, the women of the family are the owners. If there were any big beekeepers near they would doubtless be glad to use the borders of the orchard as an out-apriary for the blooming period.

The first thing that every Easterner notices in California is the waste—waste of

SAN JOAQUIN VALLEY

The Enormous Waste in Parts of California. A Great Opportunity for Progressive Beekeepers

By Florence B. Richardson

everything: fruit under the trees, lying in heaps as it has fallen, that in the far East would be considered very usable; watermelons lying in windrows in

the fields because it doesn't pay to pick them up for marketing late in the season; enough vegetables to supply a city, going to waste in every town, and *no one* seems to be worrying about it. In fact, when the Easterner who has undoubtedly been used to getting a small amount of fruit for a large amount of money, speaks of this waste, the inhabitants look pityingly at so daring a person, and stamp him at once as a new comer.

The finest Malaga grapes I ever saw, great perfect bunches that would weigh from three to five pounds each, and every single grape as perfect as a nursery-man's

* Mr. Byer says he told the man of whom he bought that he hadn't a dollar, and he did not know how he could pay for them. The old fellow looked at him a minute and said, "Young man, I have confidence in you. You give me your note and you will make good," and he did.

catalog picture, were being dumped into a hog-pen by the cartload; and when a protest was lodged by an onlooker fresh from New York the rancher smiled and said, "Oh! but they make the finest kind of pork."

Another shock was to see great loads of peaches, many of which would measure from nine to twelve inches in circumference, being thrown in as feed in the same way.

Peaches brought so little last year for canning that they were mostly fed to the hogs, or were left to rot on the ground—only the very finest elings being shipped to market. This year, however, the peach-growers have organized and now have the whip hand.

Watermelons bring so little, late in the season, that any one who wants them for feed can go to the field and pick them up for fifty cents a load, using his own judgment as to the size of a load. When the farmer can get but a dollar and a half a ton delivered at the cars, it doesn't pay him to bother with them if he has much of a haul.

The Santa Fe Railroad had home-seekers' excursions thru the great San Joaquin Valley last fall (1915), with the idea of showing people the possibilities of making a good living by settling in this fertile section of the United States. The very first words any of them uttered were in relation to the "waste" in California.

On the grainfields the grain lies so thickly in some places after harvesting that the wonder is that any of it found its way into sacks. Of course it is fine feed for turkeys, and in some sections great herds are run after the harvester; but there are huge tracts of thousands of acres where a turkey never steps foot, and all that grain is plowed under in December or January when summer fallow plowing begins.

Alfalfa seems to be the only crop that is guarded closely, and of that there are tons of nectar going to waste each year because of the lack of bees. The main fields yield comparatively little nectar under ordinary conditions, as the alfalfa is cut for hay either just before or just as the first blossoms open, thereby not giving very much chance for collection of nectar. However, there are always lots of places that the mowing-machine doesn't reach on the edges of banks and levees, also in corners and against fences, and in poultry-yards. Again, in an irrigated country like this it is poor policy to have hay down in the fields when an irrigation is due, and the cutting is often delayed until the busy bees have made a good deal of honey.

The San Joaquin Valley is a big country

in itself, and has a great diversity of crops from north to south. There are no sections (except those where grain is grown exclusively) but that provide more or less bee pasturage. The southern portion is much like the country Mr. Chadwick tells of; but as the central and northern parts of the valley are reached, alfalfa is king, and great herds of dairy cattle are found. Vast stretches of this country also raise alfalfa hay entirely to ship to the South, where land is too valuable for a hay crop.

The general topography of each section—south, center, or north—is much the same—foothills, floor of the valley, and bottom lands along the rivers.

The foothill sections have a great deal of orange, lemon, and other fruit-bloom, and sage and many other wild flowers to yield nectar, also lots of bees. The floor of the valley is the grape and alfalfa portion, with also great acreages of fruit-trees. Here, as well as in the foothills, are immense tracts of grain. Compared with the amount of available forage there are few bees kept on the floor of the valley.

The river bottoms are rich plunder, as the great variety of weeds growing give quantities of nectar for a long season. Here grow the flowers from which just about all the early brood is raised, for alfalfa bloom comes in much later than many of the nectar-yielding wild plants.

The almonds also give a good deal of early pollen, and possibly nectar, as the majority of the trees blossom in March. An almond-tree in bloom is about as beautiful a sight as one would ask to see; and standing in some lights, where a clear sky can be seen back of the trees, there is a continual rise and fall of insects going and coming from the blossoms. The almond is a shy bearer under certain circumstances; but with right selection of varieties and plenty of bees working for early brood-rearing, a good crop may be expected.

Queen-breeders are conspicuous by their absence also. Having occasion to secure a queen a year ago it was only after considerable trouble that such a one as was wanted was discovered. For every breeder in California there are ten in any eastern state, and yet there is good opportunity here for good breeding.

This is but a brief summary of the situation, yet I think that many will be able to see the possibilities of at least a paying side-line business. The women in particular on the ranches do not seem to be nearly so much alive to this opportunity as they might be, and are only making cents on chickens where they might make dollars with bees.

QUIET recent-
ly, in look-
ing for an-
other book in the
beekeeping libra-
ry of the Bureau
of Entomology, I
picked up a little
book written by

H. C. Hermann which immediately aroused interest. The book in itself is scarcely worthy of passing notice, but any one familiar with the history of the introduction of Italian bees in 1860 by Mr. S. B. Parsons will recall that he purchased these bees from Herr Hermann. These bees were shipped thru the port of Havre and reached here in April or May. The date is usually given as May, but some recent information indicates that it was really earlier.

The book in question was published by Leonh. Hitz at Chur, Switzerland, in 1859, and the copy at hand contains the book plate of the U. S. Patent Office Library. On the title page is an embossed mark "Patent Office Library." It was transferred to the Library of Congress and contains a rubber-stamp mark, "By transfer from Patent Office Library, April, 1914." It was then transferred to the Library of the U. S. Department of Agriculture apparently on January 12, 1915. It has been in the library at Drummond for over a year, but it never before came to notice. Probably there are some more treasures here which have not been unearthed.

One cannot but wonder whether the presence of this little book of 56 pages in the Patent Office is responsible for the fact that Mr. Parsons was sent to Herr Herman for the bees. It must be remembered that at that time there was no Department of Agriculture, but what work was done in agricultural research and exploration was supervised by the Commissioner of Agriculture, an officer in the Patent Office. The title page is enough to stimulate any one to want the bees described. The author reserves the right of translation*; but presumably after 57 years there can be no objection to a translation of the title page: "The Italian Alpen-bee, or the Gold Mine of Agriculture; a short and practical treatise, in order to introduce genuine, fertile Italian queens, for changing in a few months many hundred German bee colonies into Italians."

Furthermore, at the close of the book

HOW THEY CAME TO US

*A Book with Historical Associa-
tions That Throws Some Light on
the Introduction of Italians*

By E. F. Phillips

is a price list in
which the author
says: "I offer to
worthy bee-
friends at the fol-
lowing prices,
payable in cash:
A young yellow
fertilized queen:

From March 15 to April 30 with 500 bees,
20 francs; with 1000 bees, 22 francs; with
5000 bees, 35 francs, etc."

He reduced the price later in the season, and also charges 2 francs less for "queens which are less beautiful, young as well as old." There are also prices quoted for Italian drones "To July 30, 2 fr. per hundred; August 1 to October 30, 3 fr. per hundred." What was the price on July 31?

The point of chief interest is that this first importation came, not from Italy but from Switzerland. Richard Colvin, who was one of the first to import Italian queens (in 1858-9, with Langstroth,) says in an article in the report of the Commissioner of Agriculture for 1863: "Parsons *** received an importation of them from the northern part of Italy ***." Colvin also received Italian queens from Dzierzon in June, 1860, his earlier imported queens having all died. From this it may be concluded that it was commonly believed that the Parsons importation was from Italy. However, Mr. Parsons reported to the Agricultural Division of the Patent Office on January 3, 1860, the purchase of ten colonies from Herman of Tamins. Herr Herman lived in Tamins, Canton of Graubunden, in eastern Switzerland, which is located at the junction of the Vorder Rhein and the Hinter Rhein. The Rhine River then flows northeast and north to Lake Constance. Chur, where the book was published, is just below Tamins in the valley of the Rhine. From Tamins to the nearest point in Lombardy, Italy, is less than 25 miles in a direct line; but the Rhaetian Alps intervene, over which bees would have difficulty in passing. It is only about 20 miles down the river to Lichtenstein, Austria; but unless bees flew over the water they would encounter some high mountains in flying toward Austrian territory.

The book itself is curious, and full of good and bad beekeeping. It is evidently intended to induce beekeepers to buy queens of the author, an indirect method of advertising of which American bee-literature is not free. The author thinks that his bees are the true race while those of Italy are not. The Alps are, he thinks, the place of origin of this race, for "it

* The book was translated in 1860 into English and published by Geo. Neighbour & Sons, London, and also into French. In the same year there appeared a book in Italian with a similar title, perhaps the same book.

is probable that when the great flood came, certainly all the animals of the lowlands were the first to drown, and those in the mountains remained over for the after-world." So Noah did not have a pair of Italian bees on board! He says the cell of the Italian bee is 30 per cent greater in capacity than that of the blacks. Directions are given for increasing the number of Italian colonies, not only by the use of queen-cells, but, especially when skeps are used, he recommends placing a weak Italian colony on the stand of a black colony during a heavy honey-flow. "The black bees are somewhat disturbed at first, and do not want to enter, for the two kinds of bees hate each other."

He objects to Spinola's name *Apis ligustica* for the Italian bee and says: "Is there any reason why we should not be able to have a second baptism when we have become convinced that our investigations are more conformable to nature? Therefore henceforth this shall be the yellow Alpine bee, or in Latin *Apis Helvetia* or *Helvetica* (we do not understand Latin well)." Having found the origin of this bee in the Swiss Alps he says: "One must not grasp the proof of a statement by the hair, however. A nationality is to be sought, not on the borders but in the center of a country." Probably our author looks on

Switzerland and Italy as natural divisions of the earth's surface, not artificial divisions for man's convenience. "Only thru the rearing of this kind of bees may one be an apiculturist in the full sense of the word."

There are plenty of amusing statements which could be quoted. For example, the queen is said to develop in 10-17 days, workers in 18-21 days, and drones in 21-24 days. Workers are rendered sexless by the action of the other workers, not thru differences in food but by mutilation. Workers probably mate with drones. "The odor from an Italian bee colony is penetrating and readily distinguishable from a German hive." For queen-rearing, "choose the most beautiful colony; for it is like the old proverb, 'A large cow has a large calf.'"

But the author's ideas about bee-breeding are not of special interest now. The point which does interest us is that his extravagant statements of the merits of "*Apis helvetia* or *Helvetica*," and the fact that the Patent Office Library contained this particular copy of the book, probably resulted in the purchase of the colonies of "Italian bees" which came to the United States to begin the long line of Italians which are so much preferred by practical beekeepers today.



L A S T season was one of the best ever known in southern Indiana. The honey too (white clover) was of unusually fine quality. Our home

apiary is located at the edge of the city in an apple-orchard adjoining our home in full view from the Charleston Road, a highway much traveled by automobiles. The yard is kept in perfect order, and the hives are always well painted. On one of the apple-trees hangs a sign—"HONEY FOR SALE." Locating the apiary where it may be seen daily by hundreds of travelers is a good advertisement. We have callers daily who buy honey in quantities of one pound up to five gallons.

While a considerable amount of honey has been sold in this way, a quicker outlet must be found if one has a large crop. In the past, most of our honey has been sold wholesale to large fancy grocers; but they

GIRLS AS HONEY SELLERS

An Interesting and Practical Plan for Disposing of a Large Amount of Honey in Home Markets

By E. C. Walker

buy in large quantities and pay correspondingly low prices, selling to their rich patrons at fancy prices. Now, I am selfish enough to want to make at least the

same percentage of profit as the dealer, and altruistic enough to want to see honey become a staple article of food instead of a luxury. At the present price of sugar, honey should find a more ready sale than ever before.

Being anxious to realize the best possible price for our honey crop, and also desiring to develop a local retail trade, I decided that a house - to - house selling campaign must be inaugurated. Personally I don't want to peddle honey from door to door. Good solicitors are very hard to find, and I would rather have no representative than a poor one. After a little deliberation it occurred to me that my little ten-year-old daughter might sell honey. As compensa-

tion she was offered a commission of 20 per cent on all sales. She and her little playmate of eleven years of age started out enthusiastically one hot August afternoon; and as I saw the little tots leaving with all the honey they could carry I began to pity them, for I feared that disappointment was in store for them. However, upon returning they were all smiles, and reported the sale of six jars of honey at twenty-five cents each. I told them they had done splendidly, but tried to dissuade them from the work, as I feared it would be too hard for them.

The next morning, bright and early, they were again ready; but they decided not to go together, as they didn't want to divide their profits as they had the day before. Before noon they were back again to have their baskets refilled. They have been at it every day; and two other little girls having heard of their success have likewise gone into the peddling of honey.

A number of other children have asked for the privilege of selling honey; but the four children already at it said they could cover the town, and threatened to strike if we allowed any more to peddle. New Albany has a population of thirty thousand, and each of the four children is assigned a certain section of the city in which to work. Each of them has sold daily from four to fifteen dollars' worth of honey. The sales have steadily increased. The girls began with six-ounce jelly-glasses and one-pound jars; but they are now going back over the same routes and securing repeat orders, many of which are for half-gallon and gallon buckets.

These children were given no instructions whatever on how to approach a customer nor on the line of talk to hand out, but were

simply told the prices at which to sell the various packages. In their own childish way they have made their appeal, and to this very thing I attribute their success. The most timid child of the four has proven the best salesgirl of the lot, her daily sales being about double those of any of the others.

One object I had in letting my own little ten-year-old daughter sell honey was to teach her the value of money and impress her with the fact that one has to work hard to earn money. In this I was defeated, for the children think selling honey is fun; and when in the evening they return with their little purses bulged with money, and I count out their 20 per cent (which, with the eleven-year-old child, has amounted to from \$1.00 to \$3.00 per day), I fear they will have a false impression of their earning capacity. The work is hard, of course; but enthusiasm makes any task light.

The honey is white clover, of the finest quality, and is put up in attractive clear-glass jars, and neatly labeled. This, of course, helps in the selling. Then, too, as stated above, the Walker & Marzian home apiary is located so that it is in full view from the highway, and hence nearly every one in New Albany knows that we keep bees, and this gives them confidence. The appeal of a sweet-faced little girl with a basket on her arm, holding up a sparkling jar of nature's sweet, or a virgin white comb, is simply irresistible. I do not think a boy or a man or a woman could do as well as have these little girls.

The prices secured are as follows: Comb honey, 20 cts. per section; extracted honey, six-ounce jelly-glasses, 10 cts.; eight-ounce jars, 15 cts.; nineteen-ounce jars, 25 cts.; six-pound friction-top buckets, \$1.00:



twelve-pound friction-top buckets, \$2.00; chunk honey in square clear-glass quart fruit-jars, 75 cts. We sell to the local grocers also, and these prices are the same as the grocers secure. One might think that peddling honey from door to door would interfere with the grocers' sales; but, on the contrary, it has stimulated their trade if anything.

I believe beekeepers who are located in or near a town make a mistake if they do

not dispose of as much of their crop as possible in their home market; and, further, that the more honey we sell direct to the consumer the better, for in this way people who have never thought of honey as a food will become regular consumers, and will see that they get it, particularly if there are any children in the house. But when retailing honey, always be sure to get the retail price.

New Albany, Ind.



THE following extract from an extensive report of the work done by the "Organization of the Swiss Beekeepers" will, no doubt, be of interest,

to the readers of GLEANINGS, as they will find suggestions therein helpful in many ways. It seems to me that this organization is doing a work right along that benefits its members in a very material way. Many times after returning from one of our beekeepers' meetings I have asked myself what we have accomplished. We usually have a very good time, meet one another, discuss the management of bees for profit, and sometimes learn a little along this line, which is all very good so far as it goes; but we do not receive such benefits as it would seem we might. What's the reason?

The Organization of the Swiss Beekeepers consists of 117 local societies. On account of the great war a convention has not been held in two years.

The unfavorable season of 1916 made it necessary to do a great deal of feeding. The sugar needed for this purpose was obtained thru the organization at a very low rate, the Swiss government allowing the same to come in duty-free, if my understanding is correct.

The official organ of the association, *Die Schweizerische Bienenzeitung*, has 8124 subscribers.

Twenty-four beekeepers' institutes were held during 1916. Forty observation stations and seventy-four mating-stations are constantly maintained. Eleven hundred apiaries with ten thousand colonies of bees were visited by official committees.

CO-OPERATIVE SELLING.

The organization is instrumental in disposing of the honey of the members. During 1916 the honey produced by 67 local so-

cieties was thus taken care of. Nine hundred beekeepers with 21,122 colonies of bees, producing 108,151 kilos of honey (238,429 pounds) placed

their product in the hands of the association and had it sold.

The book-keeping branch of this body of beekeepers has one hundred members. According to their reports, taking a four-year average, the capital invested per colony is \$8.28; running expenses, \$2.12; depreciation, 32 cts.; net receipts, 70 cts.

A library is owned by the society, consisting of 760 different works on bee culture and 112 works of other or kindred characters. There are 1300 volumes in all, some of the books in duplicate. Four hundred and twenty-seven beekeepers availed themselves of the opportunity to read the books.

A museum is also maintained where, I presume, everything noteworthy in the line of beekeepers' implements, etc., may be seen, the same being visited by a great many people, and serving, no doubt, as a medium of education materially.

To facilitate the purchase and the sale of bees, particularly of young colonies, an agency is permanently conducted in Sursee.

There is also an accident and a foul-brood insurance bureau. During 1915 49 cases of foul brood were adjusted and paid for, damages amounting to \$302.29; 122,596 colonies were insured, paying in premiums \$1191.68, the surplus in this department being \$2144.34, the general cash surplus of the organization being \$9158.19.

From the above brief account we can see that the Swiss beekeepers are far ahead of American beekeepers as to organization. They have attained what we hardly dream of. The members of the association seem to place their honey in the hands of the central

Continued on page 153.



Conversations with Beekeepers

Do bees ever collide on the wing? Are they affected by objects in motion? Does a black hat really rouse the ire of bees? These may be unimportant to old beekeepers, but they are very interesting to the man just commencing.

As beekeeping is quite largely made up of little things, a better understanding of these may lead to our comfort in handling bees, and also so interest us that we may make a greater success in our undertaking.

COLLISION AMONG BEES.

Regarding the collision of bees when on the wing: This is something which I do not remember any one asking about before. Years ago, when this part of New York State was quite largely timbered, there was a place cleared off between two of the large tracts of woodland, about twenty rods wide and 30 to 40 rods from my apiary. This seemed to form a grand highway for the bees as they hurried to and from the apiary to the basswood bloom on the hillside a mile or two away. Many a time have I lain stretched at full length on my back directly under this highway of teeming thousands with my eyes partially shaded by my hands observing that the air was apparently full of dark lines showing their course of transit. While I never saw a head-on collision I quite frequently observed two lines apparently meet and then slightly diverge in a somewhat altered direction. This was probably a wing collision. These little jolts were apparently more numerous in case of bees which were coming in heavily loaded. At times of strong winds I would find quite a number of bees crawling, apparently disabled, on the ground with no apparent organic ailment. My thought was that these bees had been disabled by collisions. If this thought was right, why are there no collisions when bees are swarming? The air is full of circling dark lines, and I have noticed crippled bees crawling on the ground under swarms which had just alighted on some low-down limb. In case of a swarm, nearly if not all of the bees are loaded, and they fly with their abdomens hanging down more than usual, so that the chances for a head-on collision are not so great as with the rush of unloaded bees for the fields.

RAPID MOTION IRRITATES BEES.

Regarding bees being affected by objects in motion: A man will not need to run

more than two or three times backward and forward thru the apiary before he will be doing some hiding. Nothing except the jarring of their home irritates bees more than rapid motions about the hives, and especially in front of the entrance. Especially is this true where the apiarist visits the out-apiary only two or three times during the season. On a return after a two-months' absence every move is watched. If I approach a little too close to the hives it will be resented and the bees will attack my feet and ankles; and, eventually, my head. After an hour or two of work this pettishness on their part is not so noticeable.

I read somewhere that if a flag were placed in the apiary it would have a tendency to accustom the bees to motion. Having a strawberry-bed that came to the edge of the bee-yard I put up some differently colored pieces of cloth to keep the robins away. While this did not seem to have any effect on the robins, yet I soon became aware that I was not bothered so much by the nettlesomeness of the bees at this end of the apiary.

Interviews from many "inquiring" bees are not altogether pleasant. Why is it that a few bees will take upon themselves the duty of following you about the apiary? If you do not fight them there will be hardly more than from three to five. Even if you retire two or three rods away, three or four bees will pester you. If you have a paddle and knock them down and there is no scent from poison, it will not take five minutes for their places to be filled by another three to five bees when there might as well be as many thousand. It is a mystery, is it not?

THE EFFECT OF DIFFERENT COLORS?

As to the ire of bees being roused by different colors: This is something which has been much discussed during the past, the majority believing that a dark color is offensive to the bees. I well remember going with three other beekeepers to visit an apiary, the others wearing light-colored hats while mine was black. It was soon noticeable that I was the target for all cross bees. The color theory came up and I changed for the whitest of the other three hats. This change seemed to make no difference. The bees selected me as the one to vent their spite upon, while the wearer of the black hat was as immune as before. These hats were all of the kind which are




FROM THE FIELD OF EXPERIENCE

generally called straw. If it is the black color which is obnoxious to bees, it should be remembered that we all wear a black veil, or, at least, a veil with a black face, and the black portion is not molested any more than the other portions. But if the veil gets torn, and we pucker the rent with a pin, and make a fuzzy protuberance, the bees will attack that point persistently. It is the same with a fuzzy hat, white or black, and a hole in a fuzzy hat is just what a bee delights in and dives into. A good share of our dark clothing has a more or less fuzzy surface; and the more the fuzz, the more the bee clings to it; and when two or three bees discharge their poison on the same spot, the odor brings many more.

Borodino, N. Y. G. M. DOOLITTLE.



Letters from a Beekeeper's Wife

At Convention, February 1, 1917.

Dear Sis:

I know you are anxious to know how we are enjoying the convention, so while I am right here in the midst of it I'll take time to give you my impression. Rob is having the time of his life.

To begin with the first session—the only impression I had was of heavy solemnity. The beekeepers who came into the dark, stuffy room in the Capitol assigned to us were heavy-bearded, heavy-footed, solemn and important! I was almost frightened! They all wear terrible red badges with a queen bee on! There were two other wives who sat with their husbands, as I did—I mean each sat with her husband—and we all listened very respectfully and attentively to the President's address and reports of committees. I looked around during the reading and discovered that, altho there were a great many elderly bearded men present, there was more than a sprinkling of young, clear-skinned, wide-awake-looking men too. And some of the older men looked younger after I had heard them talk—especially good old Mr. Randolph.

I expected a great deal from the papers that were to be read—but, oh dear, such a disappointment! They were nothing more than the endless discussions I hear at home between beekeepers. The same old subjects—Queen-rearing, Bee Diseases, Marketing Honey (about which most of the men seem to know almost nothing) and the men who talked didn't know any more about their subjects than the other men apparently, but,

just like all beekeepers, when a paper was ended there was wordy, wandering discussion of it. As every man had to air his pet theory—every beekeeper *has* a pet theory—the discussion wandered off in all directions and never seemed to arrive. They talk about the aimless discussion in women's clubs, but it can't compare with a state beekeepers' convention.

At the end of the day I wondered to myself what Rob can get out of this organization to want to come year after year.

Rob read a paper on "Home Marketing of Honey" in which he described our work last summer. One man actually said that it was not right to charge twenty cents a pound for honey, and several intimated that Rob had not really done what he said! That made me furious, and I was glad that a young beekeeper rose and completely annihilated Rob's critics, finishing by telling them that a man who will retail honey for ten cents a pound is little short of a fool. Rob's paper was the best one read yesterday—of course I am unbiased in my judgment!

However, today the apiarist from the State College talked, and, as every one had worked his pet theory out of his system the day before, the discussion stayed somewhat nearer the topic. I noticed that the younger men almost always led in progressive ideas, but I must again include Mr. Randolph, who is almost eighty years young, and the conservative old heads would shake in disapproval. I suppose it was the same in Langstroth's day when he tried to introduce the movable-frame hive—and you know Susan B. Anthony had troubles of her own.

I've been over to the last session but slipped out to write to you. They were carrying on a question-box when I left. That's the funniest thing! Any one who desires writes out a question he would like to have answered. These are read aloud and then any one at all answers, whether he is an authority on the subject or merely thinks he is. I have an idea that some of them put in questions that they expect to answer themselves, for a lot of the men have not had much chance to talk today while there were real subjects being discussed. There will be five or six absolutely different answers to each question, so that I should suppose that an amateur would be pretty well muddled in the end.

Of course now that I've been with these beekeepers for two days I begin to see why they like to come to conventions, but I don't




FROM THE FIELD OF EXPERIENCE

believe that most of them know the real reason. It isn't for the papers, and certainly not for the awful question-box, but for the human contact with beekeepers—and they are a mighty nice lot of people. After the sessions it's the hardest thing to pry Rob loose from any little group that happens to form, and last night he stayed up and talked to the apiarist from the college until half past one. Poor Mr. Apiarist!

I'm not pitying Rob for I'm sure it was his fault. The bee-men hang around that dingy room or the hotel lobby, swapping bee stories until the lights are turned out. Rob says the convention has been a success this year, for the usual bore with a new hive did not come, and the man who has kept bees a few months but knows more about beekeeping than all the rest put together has been kept in the background. Rob is quite elated that they didn't make a new constitution this year, for he says that is the beekeeper's favorite indoor sport.

I'm glad I came for I have met lots of men that I've known by name for a long time. Tonight we leave for home. Good-bye.

MARY.



Trouble, Trouble, Toil and Trouble

As I was busy today nailing up three hundred metal-spaced frames, the thought came to me that if the manufacturers understood only to a small degree the difficulties to the beginner of properly nailing together the hive and its various parts when they are shipped in the flat they would take some measures to advise us as to the best and easiest ways of doing it.

The coming season will be my fourth with the bees; and I might say that, until my original two hives of bees arrived at my nearest station, I had seen the interior of a hive only once, and had never handled or seen bees kept for honey with the above exception. How well do I yet remember going to the station to bring home my first two colonies! There were my bees out on the platform with quite a number flying around the hives, and appearing to come from a hole in the wire netting of one of them. The express agent informed me that they were inside at first; but, owing to the bees getting out too freely for his comfort, he had placed them where I found them. What to do was the problem I had to solve, as naturally I did not relish being stung at the outset of my beekeeping career. A happy thought struck me; and, hastening to

a nearby department store, I procured two yards of cheese-cloth, and, armed with gloves, veil, and smoker (which I had fortunately brought along) proceeded to place the cloth entirely over and around the leaking hive and tied it securely in place. After that it was comparatively easy sailing, altho there were a few bees flying around; but doubtless they were more frightened than I was, but I did not know it then.

More difficulties were in front of me. I had ordered two extra two-story hives in the flat; and when I unpacked the box and endeavored to put the various parts of hive, cover, bottom-board, and frames together I found I was up against a veritable Chinese puzzle. After considerable sorting the various parts for hive body, covers, bottoms, frames, etc., were assembled, altho even then and for a year or two afterward there were a few pieces I could not identify, and it was a long time afterward before I discovered they were intended to support the galvanized iron roof. Then there were long thick nails and short thick nails and small thin nails. Where was I to use the different sizes of nails? how many nails should be used for the different parts? Then there were holes in the side bars of the frames: but what was the proper way to do the wiring? and how were the wires to be made tight? Remember I had nothing to guide me but the A B C of Bee Culture and one of the bee journals. The trouble with any of the helps of this nature that I had was that none of them were elementary enough to help such a greenhorn as I. In spite of my handicaps I finally completed the task in a fairly creditable manner, but I have since seen where I could have done a better and quicker job.

My difficulties were pretty well over, I hoped, along these lines, until I commenced getting my supplies ready for the coming season's work. I have just unpacked a shipment, and included in my order were some chaff division-boards, which I had never used before, but had ordered this year to protect some pound packages of bees I had coming. Among the packages was a roll of what I took to be first-aid cotton bandages; and it was some time before it occurred to me that they were a part of the division-boards, and longer yet before what I think is the right way of attaching them came to me; and then it was thru remembering something I had read some time back in one of the journals. How a sheer beginner would ever begin to put




FROM THE FIELD OF EXPERIENCE

one of those chaff division-boards together and attach and stuff the cushion properly I cannot imagine.

It did not matter much if one were a little slow in putting together frames and sections and other parts when there were only a few colonies to attend to; but as the number increases the task does too, and there must surely be some more expeditious way of knocking frames, hives, etc., together than I have yet found out. I have an excuse for a jig for nailing frames, but it can be very much improved; and I have a board for wiring, the idea being taken from a book I have read, but I still feel I am a long way from having the best methods. The bee-keepers I have met have not been able to help me much, so apparently I am not the only one seeking for better methods of nailing up hives and their parts. Beginners cannot afford to buy the jigs and other appliances which are listed by a few of the manufacturers, and for their sakes some instruction along these lines should be available.

Norman, Ont.

E. L. CARTER.

[Most manufacturers send directions with their supplies. Your copy might have become lost in transit. A very good way for a beginner to do is to order one hive nailed up in order to make everything plain.—ED.]



Sumthin wot i no

Mistur editur
deer sur

i sea bi ther papar (p. 1106 desembur wunst) wot yu got in yure glenins ez howt ther glucuss trust iz bust. doant yu ges its gude fer um en ther bekepers, cuz doant yu no ez howt it workt fur ther standurt ile. i red ez howt it made milliyuns uv dollurs fur um on ther stok, en ennyhow i no i yuster fead mi ole orto on nyne sent gasurlene en neow she wunt mufful atal les i giv hur nyntene sent gasurlene en its pleggy, pore stuf tu, doant yu kinder rekun ther prise uv glucuss ul riz sum en if it deuse doant yu kinder ges mor pepul ul by hunny en not yuse ther glucuss trach. ther glucuss thay bin givin us hes ben mity pore stuf en wot ul it be neow thayer bustid. semes i notis ez howt ther fellers wot maikes up er trust en doant git er hi prise ernuf fer thayer stuf wurks sose tu hev ther guvermunt bust thayer gaim en then by hek thay soke ther pepul al ther mor en maike mor munny en thay did in ther fust plaise, next yu no if

lekshuns doant chainge ther wisky foks ul wanter be bustid sote thay kin rase ther prise en maike mor munny. yu no es howt ther guvermunt iz in cumperny withe ther wisky croud sote thay bin gittin moast enythin thay wantid en if thay suckseed ma hevin help ther pore fules ez ges thay gotter hev it. i notis ez howt mistur chadwick (paige 1112 nere ther top) iz sorter jelus euz mistur crane hez got a orto. i thoart ez howt mistur chadwick wuz er bekeper en if he hante he must be wun uv them lowe dowen no kounte box gum fellers wot hante got morn gest er fu gums en doant kneade no orto. i ges hese ben liftin um cuz he sez ez howt thays hevy sote i ges hese got gude sents tu no bease gotter hev sumthin tu ete ur thay doant du wel. i doant bleve dolittuls myles iz haf ez long in yorke staite ez thay iz in mishigun en i spouse tis lokalurty wot dun it. i notis grase allin (paige 1110 secund colyum bout haf wa dowen) iz hevin trubbul euz wurms git inter hur comes. i rase some extrakt uv hunny en ile tel hur ez howt i yuster fix mi comes en howt i du it now. i yuster pile up ate, nyne en ten fraims in er hife en stan um outer dores en wen i tuk ther hifes dowen it yuster mak me sik cuz ther wurms hed dun damidge. neow fur 3 yeres ive pild ur hed um pild up nise en lite with onnly sevun fraims inter er ten fraim hife en sote bi no posurbul chanct no tu comes cud cum terguther en i doant get no mor wurms atal. i doant yuse nothin atal but gude relieberbul help wot deuse its tolts ur i du it misulph. i doant no heow menny hifes i hed last yere ennyhow twus morn er thowsund en didunt git but wun hife with wurms en thet wus cawsed by er fule mous wot prubberly got in before hife wus pild. praps its sum mor lokalurty. i notis wen er feller iz gittin ther wust uv a argermunt he jest sez ther uther feller lives in er diffurent lokalurty sote i spouse it kinder lets hissulph dowen ezeer en he doant hafter sa ther uther feller iz rite. tel thet Massey feller onter paige 1127 heze treddin on dangerrus grownde. fust he nose breaddurs en them wot cels um et ten dollars itch ul be advurtisin queanes ez ul go twenty myles fer hunny en i doant kere tu hev no sich naburs bease prowlin erround onto mi terrortorey. jist go kinder kereful mistur massey them ere breaddurs doant kneade no nu vints jist yit. doant yu sea neow es howt sum uv um hev got stranes ez ul kik fowl (not chalon) brude outtur ther bak dore fastturner it kin cum in ther frunt, byer gosh i like tu rede wot them

FROM THE FIELD OF EXPERIENCE

ere kurnuks rite thay no sumthin. wen yu go tu cannurdy ergin halterman er tu en sea fu caownt git sum mor tu rite gude stuf. i ges i eude rite mor but it ortter du fer wonset

Yures trewly
Hen E. Rich
mush rat holler
mishigun

When Bees Want to Swarm they Swarm

About forty years ago we boys rescued a cluster of bees left in a bee-tree after the honey had been taken out. We sawed off about five feet of the trunk, wrapped a sheet around the whole thing, and carried it home. There we set the trunk on end, placed a board on top, and fastened a wide board across the opening that had been split off with the exception of a large hole near the bottom about 8 by 12 inches. We left this so we could put a dish in to feed the bees.

The colony built up rapidly; and before getting the cavity in the trunk half full of honey it sent out three swarms. The bees did not have to crawl in and out thru an entrance—they just flew in and out thru that large hole. Talk about bees swarming less if they have room and ventilation! These bees had both.

I can make more money buying bees and wearing them out than I can by raising them. I buy bees every year and I find they swarm the most the first year; but I get more honey out of them the second year. When bees are kept busy they will not swarm very much. I never allow my bees to hang outside of the hive.

WIDE VERSUS NARROW SPACING.

I bought 60 colonies of bees a few years ago in hives that had no frames, the combs being built on bars only, these bars being spaced $1\frac{3}{4}$ inches from center to center. These were the largest bees I ever saw, and they brought in the honey too. There were very small entrances to the hive, so I put each block underneath to give more ventilation. Did they swarm? I guess so, but only the first summer.

Bees *will* raise some drones; and when the frames are crowded too close together the drones are likely to be dwarfed. In breeding domestic animals we take great pains to develop the sire.

Some bees do not require more than $1\frac{3}{8}$ -inch spacing. Why is it that most of the

improved bees are broad and short? Is it because the frames were spaced too close? The bees that gather honey are long-bodied. Why not breed for long slender bees?

I have bought a few queens every year for the last ten years, and have tried queens from two different experiment stations, but can find none to equal my own stock obtained by buying bees and sifting out the best.

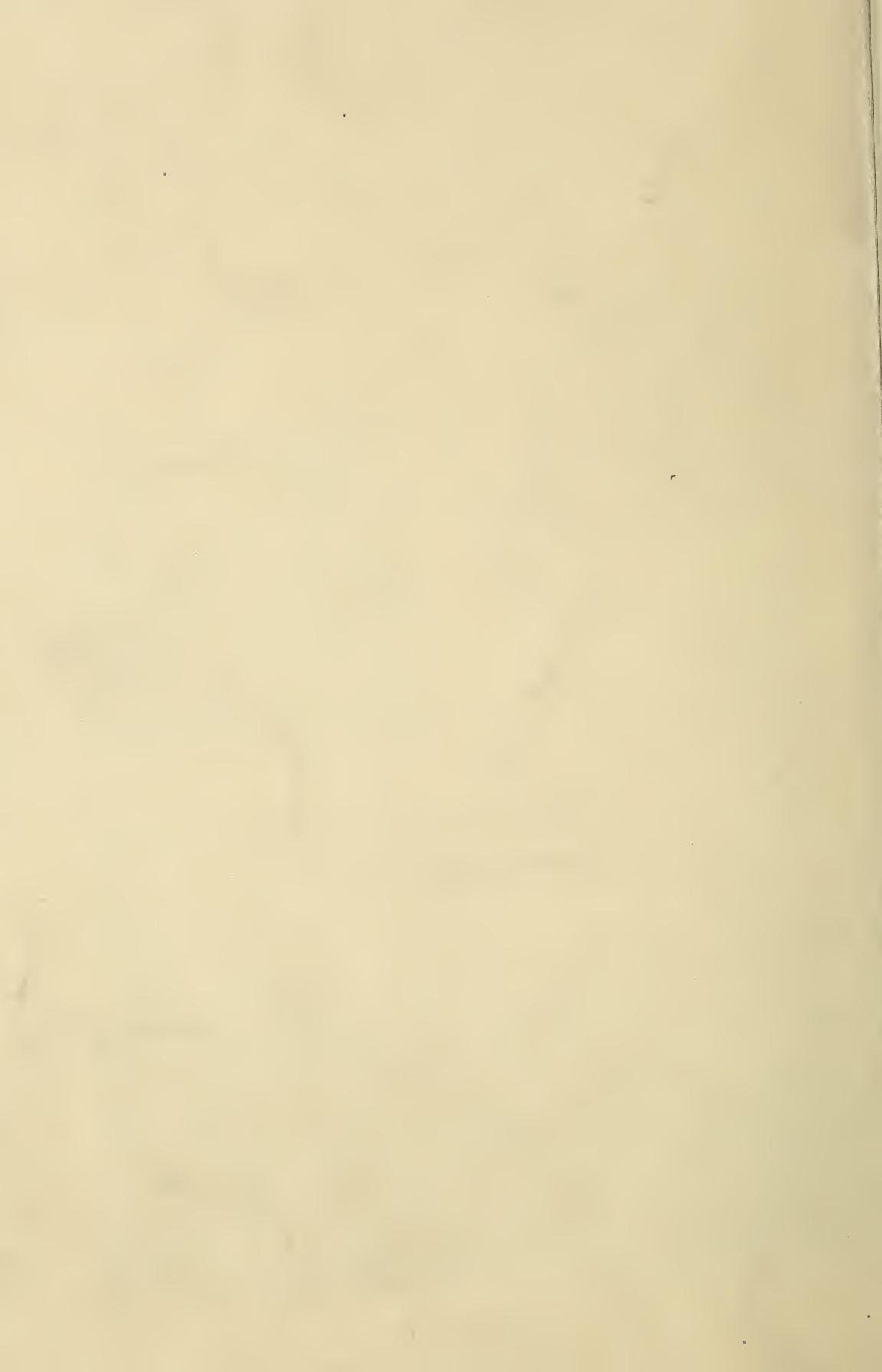
Ridgeland, Wis.

W. E. KRAUSE.

New Style Picture Frame



This is not the picture of an Eskimo wearing a Persian-lamb hood in Arctic regions in winter time. It is just Mr. P. W. Stowell, of Otsego, Mich., in hot July, sticking his face into a hole in the screen of a swarm-catcher when loaded down with bees, and then having his neighbor "snap" him in that unique position. Picture-frames of this design are not on sale generally; and, even if they were, it is not likely that they would be popular with the great American public. Just the same, a swarm-catcher with a hole in the screen and a good-looking beekeeper's face in the hole makes a novel picture.



ONCE more—"Can this be done?" Can queens be successfully reared under cover and the mating controlled? Our answer to this question is the progressive story of the experiment now being tried in the largest greenhouse in America, introductory reference to which was made in the January GLEANINGS.

This second chapter in the story of the

CAN THIS BE DONE?

First Steps Taken in the Big Queen-Rearing Experiment Under Cover Chapter II.

By the Editors



High up in the greenhouse, and—

experiment might properly be entitled "What the Drones Didn't Do and What the Queen Quit Doing."

It was on Nov. 20 last that a fairly strong colony of bees, including about 200 drones, was installed in the giant glass building. This colony was decidedly exceptional in that it had any living drones whatever as late as Nov. 20, and in the further fact that it had an abnormal number of drones throughout the season of 1916. As late as Nov. 1 the combs within the hive contained many drones. The farmer from whom the colony was secured had called the attention of Mr. Mel T. Pritchard, the A. I. Root Co.'s expert queen-breeders, to the prodigiousness of drones in this particular hive. It then occurred to Mr. Pritchard that such a drone-encumbered colony, with its drone-producing queen, was just the one to try first in the experiment of under-cover queen-rearing and mating.

The hive when shipped was provided with two frames of drone comb, one frame of worker comb (with a patch of brood as large as a man's hand) and five frames of stores, including some pollen. The comb of brood was hung between the two drone-combs, with the expectation that the queen would have to get on to them to lay—if

she were to lay at all. This hive arrived at its destination 24 hours after being shipped, and there were only a few dead bees to be found on arrival. The drones were apparently in good condition at Medina when shipped to the big greenhouse, altho, of course, they may have been old and almost about to die at the time.

At first the hive was placed for a day or two at the extreme west end of the structure, elevated only a little above the ground. At that time the greenhouse was filled with matured tomato-vines, many ripe and ripening tomatoes being on the vines. (The tomato-blossom has no attraction for bees.) It was opened by the greenhouse company's apiarian only to the extent of lifting the cover and removing the screen. He made no investigation of hive conditions at that time. Ten days later, after the hive had been elevated to the platform in the center of the building, the first observation of conditions within the experimental hive was made. Eggs and unsealed worker brood were found in the combs, but the queen had laid in the worker-cells only. There was no drone brood at that time. A week later there were no drone eggs nor drone brood to be found, and the worker brood was sealed.

The greenhouse apiarian, a competent and observant beekeeper, gave his testimony that he had never seen a drone nor drone egg within the big steel-and-glass structure. What had become of the drones in the hive shipped under Mr. Pritchard's directions,

he could not say. They had completely disappeared without his having seen one of them, altho he had watched for a drone—dead or alive—all thru the big greenhouse since the arrival of the experimental hive. A few of the bees of this hive had flown almost every day.

On Jan. 6, one of the editors of GLEANINGS and Mr. Pritchard made a journey to the scene of experiment to investigate conditions. The experimental hive was opened on its elevated platform by Mr. Pritchard, and the greenhouse apiarian (the two being shown at this work in the pictures at either side of this page). This examination was



Looking them over very carefully.

very carefully made. No sign of drones could be found. The queen was discovered, after long search, reduced in size and evidently not laying. She looked old, and it was suggested that it might be because of old age that she had produced so many drones during the season just past. The pollen had been entirely consumed, which fact would account for the queen's not laying, and for the discontinuance of brood-rearing. Some rye flour that had been placed in a shallow box near the bees had not been touched. The bees, however, were storing syrup (one part sugar, two parts water), fed to them in a Boardman entrance feeder. In order to make the bees store the flour, Mr. Pritchard secured a salt-shaker, filled it with flour, and thoroly sprinkled it over the bees and frames, directing the greenhouse man to examine the hive within a day or two to see if they had cleaned up and stored the flour in lieu of pollen.

Now that the drones had completely disappeared and the queen had quit laying, it became necessary to get the queen to lay again, if possible, and so the flour was

resorted to as a stimulant. Within a few days the bees had cleaned up the flour and the queen had begun laying. On Jan. 17 there was a patch of worker-brood as large as a silver dollar.

At present the building is filled with lettuce. This does not require so high a temperature as the cucumbers, which go in later—50 to 60 degrees in the day-time and 45 at night. When the sun shines, however, the temperature often reaches 70 or 75. The lettuce will occupy the space until about the first of March when the cucumbers, now being grown from the seed in other buildings, will take its place. The cucumber vines, trained on wires, reach a height of seven or eight feet; and this, together with the fact that every bit of the space below is needed, caused us to locate the bees on the platform some twelve feet high above the braces and pipes.

What shall we say of the results to date? The old drones did not fly, return to the hive and live, as we had hoped. But, as they say in the story magazines, "Continued in our next."



Interior of the great greenhouse building, showing length view, workmen preparing the earth beds for lettuce, and lettuce plants set in the beds to the right, Jan. 6.

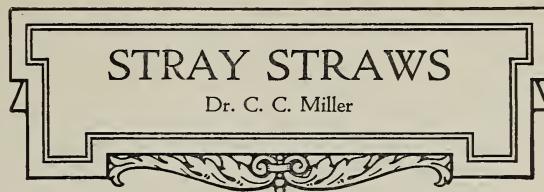
MANY of us went over to the 1 $\frac{3}{8}$ spacing, some of us because it was thought better, and some of us, like myself, because it was the fashion. But if we should look the matter up we might find that a good many have quietly gone along using the 1 $\frac{1}{2}$ spacing without saying anything about it. I didn't know till lately that the Dadants spaced 1 $\frac{1}{2}$, but I think Doolittle has always done so, and no doubt "there are others."

SORRY to see the announcement that I was to be one of the speakers at the Madison convention. I'd like ever so much to be there, but have never had any expectation of it.

DRIFTING used to be a pretty bad thing here when we took bees out of the cellar. We still take them out on a bright day, when they can fly as soon as roused up; but there has been no drifting for years. The only thing I know to account for it is that now we close the entrance to an inch just as soon as the hive is on its stand and the dead bees cleaned out.

"NEW ZEALAND cannot consume all of the honey produced," p. 1060. In a way, that is true; and I suppose the same might be said of Colorado and some other states. Getting down to bed-rock, however, I doubt very much whether it's strictly true of any spot on earth as large as New Zealand. If a strict embargo were placed upon exporting a pound of honey, and the people were obliged to consume all produced, I believe they would be the gainers by it in health and strength. Same with Colorado. Might not be the best thing for the beekeepers, and, again, it might.

REARING queen-cells on a comb lying flat as described on p. 1160, Dec. 15, was considerably exploited a few years ago. I think the plan was "made in Germany," but was never much used in this country. Last summer I tried it with a little variation. I used a super so shallow that there was barely room for cells to be built down without touching the top-bars, and about $\frac{1}{2}$ -inch space above the comb. The comb had eggs and brood in all stages—there was no other brood in the hive, merely combs with honey—and I didn't take the trouble to destroy any of the cells. Two little sticks helped to support the comb so it would not sag. The bees took care of



both sides, but started cells only on the lower side. One nice thing is that the cells hang down straight, and can be cut out so as to leave a very small hole, the cell not having attached to it the usual amount of waste comb.

T. T. TAYLOR, you are inclined to think, p. 1172, "it would be much better for the present and future of beekeeping, in some countries at least, if beekeepers were to co-operate in improving that variety of bee which is found to be the dominant one of their respective countries." That phrase "in some countries" should have its full emphasis. Your belief is all right for Switzerland, and perhaps for England, for I think the majority of you Britishers believe blacks better than Italians, and I believe blacks are the dominant race with you. You are quite right in saying "this question pertains more to other countries than to the United States." It doesn't pertain to this country at all, keeping in mind that it is a question of concentrating on the dominant race. It is pretty clearly established that wherever blacks and Italians are left on an equal footing the blacks will run out the Italians, so the blacks are the dominant race. It is equally well established that Italians are for us the better race. Time was when some of our leading beekeepers maintained that blacks were better, and stubbornly held on to them. But one by one they recanted, and at present it would be hard to find an American beekeeper who doesn't try to exclude black blood as rigidly as he can.

So it's idle to talk to American beekeepers about concentrating upon the dominant race, either for the present or future of beekeeping. Would it be better to concentrate upon Italians? May be. It would if we were sure they were the best race. Possibly it may come to that. Very likely it will if ever the time comes when all agree that the Italian is the best. But at present some think they get better results from some variety other than Italians; and so long as they have that belief one cannot blame them for holding on to their favorites. This is a pretty big country, and possibly it may turn out that one bee may be best for a certain region and another for a certain other region.

Certainly there would be advantages if we could have just one kind of bee for the whole country, but—

RAIN conditions are satisfactory at this date, Jan. 7.

The state convention is said to have been postponed until some time in February.

Mr. W. H. Crawford, of Roswell, N. M., has moved to our state and has taken over a location near Santa Ana.

Did you ever notice that the man who knows *all* about bees is generally trying to find out what his neighbors know?

Bees, like men, work better under excitement. When there is big work at hand they are in a frenzy to secure their share of the spoils.

Well-ripened honey cannot be secured with a single super in a heavy flow without shortening the harvest or giving the colony too much of an inducement to swarm.

I am for a federal quarantine law, with government inspection. It is the only way that a man may be safe in the movement of bees without keeping a library of local and state laws.

Useless equipment and valueless appliances should be avoided; patent entrance-guards, lid-fasteners, etc., are, as a rule, in the way and occupy valuable time in their care and manipulation.

The market is cleaned up, with prices high and strong. Now is the time to give your bees every possible help. It may be a chance to meet the high cost of living and smile in its face.

Mr. G. W. Dixon, of Beaumont, is fast becoming known as the honey-man of Redlands. He is making a great success of peddling honey. He tries to cover the town once every thirty days, and his business is growing rapidly.

Natural swarming does not pay; in fact, it may almost be called a willful waste. Have the combs drawn by strong colonies during the honey-flow, then divide just at the close of the season before the flow has entirely stopped. Young queens mated in nuclei ready for the division are a big asset.

IN CALIFORNIA

P. C. Chadwick

Do not try to nurse a little bunch of bees thru on ten good combs if such combs are needed in the harvest to catch the honey-flow. The chances are that the queen is deficient or the nucleus would be in a more prosperous condition anyway.

There is too much unmeaning business and too little instructive knowledge in our state convention. Many people come to hear and learn, and care nothing about the idle resolutions and dry business. The Standard Oil Company could map out its entire work for the year while we are holding a business session.

The oranges will begin to put out their tiny leaves by the middle of February. The bloom will follow according to the warmth of the days following; but it is to be hoped that it may not occur as it did last season—far ahead of the bees. From April 15 to May 15 is an ideal time for their blooming period.

The apiary of Mr. G. W. Dixon, of Beaumont, was looted recently according to the Beaumont *Leader*. Thirty stands of bees were destroyed by the bees being smoked out and their honey taken. Mr. Dixon has offered a reward for the apprehension of the culprit. It is to be hoped that he may succeed in getting the law into action, thus making an object-lesson.

Ventilating hives by raising the fronts is more than folly in this climate. This is especially true where comb honey is being produced. The conservation of all available heat during the cool nights is necessary to the building of comb in the sections. With extracted honey the practice is nearly as bad if the difference between night and day averages around 35 degrees.

Recently a friend who had been reading Dr. Phillips' work met me on the street and straightway began to inform me that Dr. Phillips said sage honey would granulate, and that I had said it would not do so. I have samples of my crop of both 1912 and 1914 that show not the least sign of any granulation. Besides this I know of sage honey that has been kept for a number of years that shows no sign of granulating. The fact of the matter is,

much of the honey sold as sage is not pure sage by any means. Pure well-ripened sage honey will not granulate.

There is nothing that adds so much to the sale of an article as the looks. Some years ago there was a car of very fine honey being loaded at our local station. One party, in order to save a few cents, was permitted to put an old weather-stained case in the car, all the rest being new and bright. The sight of this one detracted from the entire car and cheapened its looks dollars where it saved the shipper cents.

Much better combs can be secured by using medium brood foundation than light brood, and it is really no saving to use light in preference to medium. With plenty of wax on hand to turn into foundation I would prefer heavy brood to either. It very often happens that when foundation is given a colony they are not prepared with wax scales to start drawing it at once, and in consequence the foundation is pulled loose from the wires, buckled with heat, or sagged by the continual weight of bees hanging on it. With medium or heavy foundation there is plenty of available wax in the foundation to start the comb without additional wax, and the foundation is quickly drawn and the wires fixed into the comb at once.

If short of combs in the extracting season, go to the brood-chamber and remove a frame from each ten-frame colony. By the time the brood hatches from them they would be of little value as brood-combs unless the flow were exceptionally long. Moreover, nine frames in a ten-frame body will often produce more brood than ten frames; for unless they are all perfectly straight and evenly spaced there is often a crowded comb that will not be used for brood anyway. Self-spacing frames are an exception; but the majority of the frames in this state are not self-spacing. When the flow is on, combs are a great asset, and add materially to the honey crop if they are needed badly.

After two years of careful observation I am ready to state positively that the pepper-trees bloom during every month of the year. I do not mean by this that every tree blooms continuously, but that there are some of these trees in bloom during the entire year. The period of heaviest blooming and heaviest yielding of nectar is during June with a little diminution during

July. The amount stored from this source often reaches to thirty or forty pounds. The honey is dark, rank, and but little superior to honey-dew. The commercial importance is not large, as the trees are found mostly in our cities as shade and street trees. They are very beautiful.

To those who may be interested in the controversy over the distance bees will fly for nectar I offer this. I have secured orange honey in quantities for twelve years, there being only three years in that time when I secured none. One year was a failure; and during the other two the flow came at the same period the button sage was blooming and yielding profusely, and the bees did not leave the sage for the orange. The orange-tree nearest to this apiary is three miles in a direct line. The bees that went this distance have been of the best-known strains in America, and there was no visible difference in the distance any of them would go, all appearing equal to the task.

One of the oldest and foremost bee-keepers in the state, a man who has been successful in the bee business for nearly forty years, recently wrote me in favor of chaff hives for wintering. This may seem foolish to many of my readers; but a careful diagnosing of the facts substantiates his ideas. There is a great variation of temperature between day and night, and then we often have a long spell in winter that is very different from the balmy days often pictured. To illustrate, I am citing some facts given by the local weather bureau, of the temperatures at this station; and it should be remembered that here the weather bureau is located in what is known as the frostless belt of the orange district. There were 23 days in December when the minimum temperature reached a point below 40 degrees; 15 days when the minimum reached below 35, and 11 days when it reached below the freezing-point. The highest maximum for the month was 78; the minimum for the same day, 36. The lowest maximum was 38 degrees, and there were only 8 days when the maximum reached 70. By this it may be seen that, while the temperatures are not exceptionally low, yet the long period of continued cold, and changes, retard the progress of the colony that should be breeding rapidly as early as February. The necessity of having the colony in a warm hive to meet these changes is apparent, and I am inclined to believe that my correspondent is in position to be an excellent judge of the matter.

THAT editorial, pages 1155 and 1156, was of special interest to me. I have been using frames spaced 1½ inches from center to center for some forty years. I supposed I was not quite up to our best beekeepers in this respect. After using for a few years frames spaced 1⅓ they seemed to me too close for convenience, and I decided on 1½ for myself. After using this spacing forty years I have no reason to regret my choice. So far as the prosperity of the colony is concerned I believe it makes little difference. During early spring 1⅓ might be best, but later 1½ is quite as good or even better.

* * *

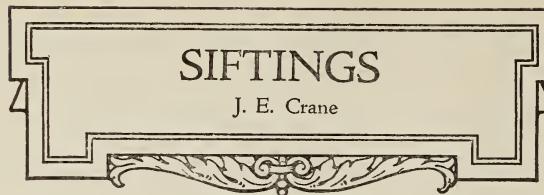
On page 1159 Mr. P. C. Chadwick goes for Dr. Bonney for asserting that parcel-post packages are willfully broken into or handled in a very violent manner. Now, one cannot help admiring Mr. Chadwick's charitable view of the matter; but with some rather unpleasant experience we can not help thinking that Dr. Bonney's conclusions are correct. Some time ago we sent to New York a package containing 24 small jars of honey, only fifteen of which reached their destination. We could not learn that any had been broken; but the nine jars were just removed slick and clean. When postoffice authorities were interrogated we were informed that they did not hold themselves responsible unless packages were insured.

* * *

I mentioned in the January issue, page 48, that our bees had to go into cellar without a chance to fly late in November. They have been very quiet since being placed in the cellar, and yet they have flown out on to the cellar floor, I should judge, twice as much as a year ago when they had a chance to fly before being placed in the cellar. Now I am wondering if a large per cent of the bees that fly out of their hives late in November are not lost. If we had an instrument to register all the bees that leave a hive and return on any given day it would often prove very interesting.

* * *

J. E. Jordan tells beekeepers that when "an inspector comes to your place to examine your bees, have him wash and disinfect his hands and tools before beginning his work. Have this done in your presence—do not take his word for it." He



does not insist on our changing our shirts and putting on a new suit of clothes, let us be thankful. But would it not be well, when an inspector says he has disinfected his hands when he leaves a yard where disease is found, to let that answer? To doubt his word is to treat him as a liar to start with.

* * *

That picture on page 29, January, of a hive that went thru the fire, is well worth preserving. One of the saddest duties that falls to the lot of the bee inspector is the burning of hives of diseased bees, and sometimes a whole apiary. The most surprising thing about it is the intense heat required to burn the combs unless separated so the heat and air can get at them.

* * *

That new monthly GLEANINGS referred to on page 1153, Dec. 15, came to hand Jan. 15, 1917. I confess I was feeling a little sorry there was to be a change; but since looking over the January monthly I don't feel so bad. I find it lacks but five pages of having twice the reading-matter as one of last year's numbers; besides, it is a beauty.

* * *

Dr. Miller thinks, after studying the United States honey report, we are progressing backward — page 45, January. After trying to fill out blanks for a honey crop for the past two years, I have doubted if they would amount to much. Well, cheer up! they will do better *after a while, we hope.*

* * *

Mr. P. C. Chadwick, page 1159, Dec. 15, is surprised to find an old-maid queen among his bees. I don't see why a queen should not have the privilege of living a maiden life as well as females of other orders of life.

* * *

"Can queens be successfully reared under cover, and mating controlled?" asks the editors of GLEANINGS on page 40, January issue. Don't know—hope so. We shall watch the experiment with great interest.

* * *

"The riper the honey," says P. C. Chadwick, page 1112, Dec. 1, "the less it will granulate," and he is right; and he might have added, the longer it will take it to granulate, and the finer will be the grain.

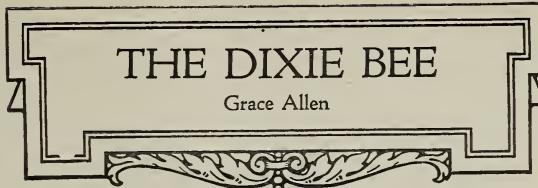
I HESITATE to take issue with Dr. Miller; but for a fact I can't see how the use of a dummy, division-board, follower, or what-

not, gives any more room to handle the frames, or makes the withdrawal of the first comb any easier. There is just so much room in a hive, and there are just so many combs. As to the time element, *something* has to be done first—either the combs separated (if a comb is to be withdrawn from the center first), or the dummy itself removed, and I doubt that the latter is much the quicker operation. Then if the first comb to be taken out is in the center, the combs have to be separated anyway, just the same. Personally I usually remove one outer comb first, as there are fewer bees there, and more room—the extra space in the hive being divided between the two sides. When the hive is to be closed after inspection, it takes a single twist of the wrist to force all the combs against one side of the hive, followed by another lesser twist on the other side, to push them half-way back. Then when opened, either outside comb can be removed with comparative ease and with little disturbance of bees; and oh! with much greater ease than I, at least, previously experienced tugging away at a stand-pat division-board. Quoting the good doctor, with only a slight change, "Use dummies if you want to, but never again for me."

Another thing in that same paragraph, 1013, Nov. 1, that interested and surprised me was the statement that the outside comb "sometimes" has less brood than the others. With us it *always* has less. And except in the height of the brood-rearing season it has none, and often not then. Our outside combs seem to be dedicated to pollen and honey—except, as I said before, in the height of spring brood-rearing, in strong colonies.

* * *

"What does it mean when bees carry out a good many dead immature bees?" It may mean one of several things. At certain times of the year it may mean chilled brood. If there is no disease, it quite likely means that in the early spring or in the fall, or whenever a sudden change brings on cold nights. In the late summer, the workers often destroy drone brood, tearing the larvæ from the cells and dragging them out, dead, to be dumped in front of the hive. We noticed



* * *

One night early in January I had frankly and forcibly expressed my righteous and housewifely indignation as to the "impudence of that big fly to come buzzing around our kitchen light in the middle of winter," and was preparing to swat it according to the teachings of the times. Then the big impudent fly turned out to be a bee that had evidently varied her frolics in the winter sunshine by a trip into our kitchen, via the open window. The following morning it sounded like spring, the bees were humming so, flying in and out of every hive. This kept up for several days; and one noon as I sat on a hive in the warm sun watching them, and thinking how all this winter flying availed them nothing, I recalled a letter received last spring from Mr. E. G. Carr, just after finishing his work in North Carolina. So I looked it up, and here quote what he said about Dixie bees:

"Regarding the advisability of winter packing for the South, if one has in mind the need of packing because of low temperatures, very few North Carolina beekeepers are interested; but when we get down to the real object of packing, we find it is to keep the bees quiet. As every one knows, Southern bees spend needlessly great amounts of energy in flying when there is nothing to do. Stop this flying by adequate packing, and this energy is conserved to be used in a useful way when the blossoms open in spring."

At present, in the middle of the month, conditions are very different. For two or three nights we have struck as low as 11 to 15 degrees above zero, yesterday's temperature averaging 16, or 21 degrees below normal for that day. Altho at one time in December the official mercury lacked only 2 degrees of hitting zero itself, this present temperature is cold for Dixie Land. I have just come in from the beeyard, where I found several entrances frozen tight with the mixture of rain, snow, and sleet that had beat into them in the early part of the cold wave. Different beekeepers hold differing views as to the harm of these closed entrances; but, moved by "Safety First" considerations, I brushed the loose snow from the alighting-boards and then chopped out enough of the ice to admit the air.

that in August last year. Were your "dead immature bees" drones? If so, it was merely part of the general destruction of the drones.

NEVER before have we had such a severe winter as this one; but bees are wintering well, and, what is of equal interest, there is a great surplus of snow in the mountains. The Forest Service reports more snow than any year for eight years past. Coming early, as much of the snow did, it has become well packed, and thus insures plenty of water for late irrigation.

THE HONEY MARKET.

The honey market is getting fairly well cleaned up on extracted honey, while comb honey is still slow sale. The extracted honey sells at the ratio of about two to one for comb honey. If this season is at all indicative of the years to come, many of our honey-producers will be obliged to change from comb-honey to extracted-honey production. The advice of the editors last year to produce more extracted honey either fell upon deaf ears or the beekeepers could not afford to make the change, or they did not have faith in the editors as prophets. For myself, I could not change from comb to extracted honey short of an expense that would consume an entire crop, and a good one too.

From inquiry among the honey-producers of Colorado, it is apparent that the average production per colony is as large in sections of comb honey as it is in pounds of extracted. In fact, the largest Colorado yields of the last few years reported to me have been comb-honey-producing colonies. The expert comb-honey producer can secure as many sections of honey as the extracted-honey producer can secure pounds of extracted. Unless comb honey drops below \$2.00 per case for 24 sections of comb honey, the comb-honey producer had better stick to his sections and separators. Of course, if the price of extracted honey goes up to 10 or 11 cts. per pound to the producer, then there is more money in extracted honey. The price realized on extracted honey by producers in Colorado has been from 6 to $7\frac{3}{4}$ cts. At these prices comb honey is preferable to the majority of bee-men, because comb-honey production is more apt to leave the colonies in fine condition for wintering.

THE BOULDER COUNTY BEE-CLUB.

The beekeepers of Boulder County have felt for some time the need of an association to aid in a social and business way. January 12 the club was organized, sixteen bee-

keepers being present. The attendance was rather small on account of the cold stormy day.

Officers elected were: Ward H. Foster, Boulder, President; D. W. Spangler, Longmont, vice-president; S. A. Mendum, Boulder, Secretary-treasurer.

The lines of work out-lined for the club are, mainly, their apiary exhibit, Boulder County Fair; protective club to protect out-apiaries from thieves; buying supplies and selling honey; social intercourse between beekeepers.

The next meeting will be held in Longmont at the call of the president.

A PUZZLER TO THE CROWDS.

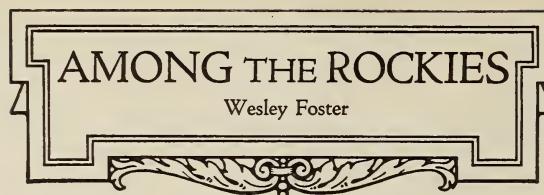
Several years ago the Colorado Agricultural College operated a special demonstration train over four lines of railroad in Colorado. Three large baggage-cars full of exhibits, two passenger coaches for lecture cars, and a dining-car, made up the train. Domestic science, bee culture, rural school, alfalfa, dairy, silo construction, agronomy, veterinary, and poultry exhibits made up the train. The bee-culture exhibit filled about one-third of a car, the rest of the car being taken with the domestic-science and rural-school exhibits.

The honey-extractor was the puzzler to the crowds. If I was asked once I was asked forty times if that was a churn. The guesses were wide of the mark. A bread-mixer, clothes-drier, cream-separator, corn-sheller, ice-cream freezer, and washing-machine were all mentioned as possibilities.

One little boy stood gazing at the honey cookies in the glass jar for some time, then came up to me holding out a nickel and said, "I will take a nickel's worth of these cookies."

Another little fellow came up and inquired if I could whistle. I had to admit that very little whistling could I do. "Well, I can tell you how to get so you can. When I was ten years old I could not whistle till one day a bee stung me on the lip, and I have been able to whistle ever since!"

[Mr. Foster has mentioned something which all exhibitors have discovered but which beekeepers as a class do not seem to realize. What percentage of the honey consumers know what a honey-extractor is? What percentage know what *extracted* honey is? Is it not a fact that grocers, honey retailers and honey consumers still use the old term "strained honey"?—Ed.]



RAIN is needed badly over the entire state. The past four months have been abnormally dry. In October the precipitation was

well below normal. In November it was decidedly deficient, and in December there was almost a drouth. In this section the rainfall deficiency is 8.23 inches for the past four months. As a result of the severe and prolonged drouth the horsemint is suffering badly. On account of the dry weather during the late summer the seed did not germinate until so very late that the plants were small when the cold weather set in. Now the drouth is causing much horsemint to die. Should a cold spell come before a rain it is feared that there will be but little horsemint next year.

The beekeepers in the mesquite section do not have to worry over a dry winter, for mesquite seems to yield most abundantly after a drouth.

Warm weather has prevailed for over a month now. In protected places the fruit-buds are beginning to swell, and considerable anxiety is felt for the fruit crop if cold weather does not come soon. The bees have been flying freely during the warm weather.

The beekeepers in the southern part of the state are making preparations already for the coming honey-flow. Many apiaries are being moved to more desirable locations. Some of the older beekeepers are buying what extra colonies they can. In the northern sections the fall drouth cut off the honey-flow, and the bees went into the winter with only fair stores. The same condition prevails in the extreme southern part. In the central and southwestern sections the bees are in good condition. The beekeepers are coming to realize more the value of having strong colonies when the honey-flow starts; consequently they are not robbing so closely, and many are now in favor of leaving on a super of honey for early spring food.

Most beekeepers are now wishing for some of the honey that was almost given away last summer. The price has advanced 3 and 4 cents per pound, but there is very little honey left to offer at that price. It is to be hoped that the lesson of the past season will be taken seriously. There is now a local demand for honey that can not be met, and there is still call for carload lots which are out of the question. It is quite likely that the present honey prices

IN TEXAS

By F. B. Paddock, State Entomologist

spring honey flow is on.

It has been variously estimated that the honey marketed in this state during 1916 was five million pounds, three-fifths of which was produced in the southwestern section of the state.

EXPERIMENTAL APIARIES.

The legislature now in session is to be asked to provide for the establishment of experimental apiaries, to be conducted under the supervision of the Director of the Experiment Station. The need for such work has been felt for many years by the beekeepers of the state. It was some years ago that L. H. Scholl, now a member of the legislature, first suggested such a plan for the benefit of Texas beekeepers. The problems of beekeeping in this state are peculiar, and can not be solved by deductions made from results obtained elsewhere in the United States. The investigations contemplated for this work will in no way duplicate the excellent work conducted by the Bureau of Entomology at Washington, D. C., under the direction of Dr. Phillips. The work of the Texas apiaries will be outlined with a view to solving the problems of every-day management of bees and the production of honey under the varied conditions of this state.

THE NEW DISEASE LAW.

Circular 17 of the Texas Agricultural Experiment Station, superseding Circulars 8, 11, and 14, is just being distributed among the beekeepers of the state. This gives the full text of the foul-brood law, and all the regulations which have been issued by the State Entomologist. The new regulations are effective March 1, 1917. There are now thirty-one counties quarantined against the shipment into them of any bees, honey, or appliances capable of transmitting foul brood. Twenty-five local inspectors are now employed to carry out the foul-brood-eradication work.

One of the greatest indirect benefits derived from the foul-brood-eradication work is the general improvement of the beekeeping industry in the counties where the work is now being conducted. The biggest factor in this improvement has been the necessary change from the old "gums" to movable-frame hives, to comply with the law and the regulations.

will encourage the beekeepers to give their bees every attention in order that they may be in the best possible condition to gather when the

THE consumption of honey is growing rapidly. From all sides comes this testimony. Not only has the higher price of sugars

and of all other commodities boosted the price of honey, but larger amounts of honey are now being shipped to foreign countries than when the war began. Like the cotton crop and cotton prices, at first hit hard by the war, now the conditions on the other side really boost prices for honey as well as cotton. The editor of the *American Bee Journal*, in an editorial in both the December and January issues, calls attention very generously to the great good to the fraternity in general by the widespread advertising of Airline honey. Shortage of fruit the past year, and partial failure of crops in some of the western states, are also mentioned as contributing causes in the raising of prices for honey all over the Union.

The steady campaigns conducted by many bee-men everywhere are having their effect. In this connection we feel like calling attention to an excellent article by E. M. Cole in the December number of the *American Bee Journal* that emphasizes some cogent pointers in widening still more the sales and uses of honey. Mr. Cole says, in substance: "Spread the use of honey, and directions for its use, in the domestic science courses of all schools, public and private. Also see that the many pancake flours used contain rules for use of honey, instead of the common syrups. Have honey included in the recipes if possible. Educate the companies that send out baking and demonstrating crews to teach the value and palatability of honey. Baking-powder concerns, too, offer an attractive field for promulgating the merits of honey. Let every recipe of theirs call for honey, and the demand will grow amazingly. Teach grown people, rather than children, the usefulness of our product for their particular needs—an article specially fitted to supply the bone and muscle tissue, rather than the cells of the growing child. All living near communities of foreign-born people should cultivate that market; for such foreigners are used to eating honey, and often prefer dark grades."

SPECIAL NEEDS OF SPECIAL FIELDS.

If there is one fact more plain today than any other it is that the directions given and found good for certain locations or climates

Our Neighbors' Fields

By E. G. Baldwin

—the North, for example, will not necessarily hold good for places elsewhere, notably further south. It looks now, to judge from an article

in the *Beekeepers' Item* for December, as if Texas might soon have an experiment station of its own for apicultural work. It has been pointed out by Louis Scholl and many others that almost all bee-books, bee-magazines, and literature on bees, are all permeated with viewpoints suited largely to bee-men in the North. Only of late have southern conditions become the subject and theme of really serious study and investigation. Dr. Phillips, of Washington, is starting in the South, for reasons made clear by him. The need of experimental work, to be carried on from the viewpoint of Texas conditions, is made very evident in the article referred to. Canada, Iowa, Tennessee, Missouri, and more than a dozen states, have experiment stations. We feel sure that every state in the Union needs its own special station for studying in a practical and helpful way the particular problems that confront bee-men in those particular locations. May the Texas station speedily materialize.

A rare source of honey is the button-wood (*Conocarpus erecta*). This is a tree that grows along muddy or sandy shores in the southern part of the state, on the adjoining Keys, and even on into South America. It is common in the West Indies, and in Central America also. It belongs to the white-mangrove family, tho not related to the black mangrove of the east and west coasts (*Avicennia nitida*), nor to the so-called red mangrove (*Rhizophora mangle*), which grows a little further south than the black mangrove. These three mangroves are confusing to a newcomer. Only the black so far has proved to be a heavy yelder; but probably much honey that has been secreted by the white mangrove, in localities where it grows abundantly, has been attributed to other sources. A correspondent from the East Coast, below Melbourne, Fla., reports that it came into bloom this year about July 30 or early in August. It usually comes soon after black mangrove. I have been unable to secure any authentic information regarding the quality of the honey, rather supposing that it is difficult to separate it from other sources.

The question is asked, many times a year, whether queens reared in the southern states are as hardy, and their progeny as active and energetic, as from queens reared in the colder North. Many years ago we discussed this question carefully with that master of queen-rearing, Mr. J. P. Moore, of Morgan, Ky. His opinion was most decidedly in the affirmative, I recall. We are pleased to note a similar conclusion from no less an authority in bee matters than Dr. C. C. Miller. In a recent issue of the *American Bee Journal* Dr. Miller says, "The usual reply that queens reared in the South are just as hardy as those reared in the North may be counted correct for all practical purposes." The editor of that journal adds, very aptly we think, the following: "Italian bees, which are hardy, are from a country with a warm climate. It freezes but little in any part of Italy, and the climate is certainly less severe than that of Texas." These conclusions, we believe, are most sound. It has taken ages, indubitably, to produce and fix the present characteristics in bees. Even the lifetime of an individual man is too short more than to modify in a very slight degree, if any, the innate traits and dispositions of the *Apes melliferae*. Hundreds of years of breeding in the South would, we feel sure, work no appreciable change in the honey-gathering powers and propensities of the honey-bee. And, granted even that a slight change might in ages be noted, or even in a few generations, it would take but one requeening to put all back on the original basis of honey-gathering qualities. Dr. Eigenmann, of the State University of Indiana, in his work "Blind Fishes of Green River, Mammoth Cave, Ky.," and of other underground waters of both continents, has shown conclusively that environment does have a mighty effect in course of ages. He proves, by specimens and wise conclusions, that fishes, for instance, that are altogether without light or access to it pass thru a very gradual loss of sight. At first the eye remains intact, but no vision, or at least impaired vision; then the eye itself becomes immovable, and finally only a dark spot, no eye at all, shows where the eye had been; and, at last, no eye or spot shows. But note, first, that this is only where *no* light is admitted, not where partial light is attainable; and, second, that it requires ages longer than man can reckon to work any change of this sort—any partial atrophying of organs. The same, he shows, is true of traits and characteristics. Now for the application to bees. Were bees brought down from the North to the South, not permitted to gather *honey at all* in their new field, then, in course of ages (and note

the *time* element, almost unmeasurable), such bees might, in their descendants, show loss of honey-gathering or other normal bee propensities; but so long as they exercise their function of gathering nectar, not only every month but almost every day of the year they will certainly lose none of their fondness for nectar nor ability to cull it from the flowers. What is true of one quality must be consequently true of others—hardiness, for instance, which was the theme discussed in the article referred to above.

* * *

One statement made by Dr. Phillips, *Beekeepers' Review* for December, seems contradictory, or at least not in accordance with the facts. He says, p. 457, in his classification of different honeys, "Levulose type, e. g., mangrove, tupelo, sage," and on p. 456 he adds, "If the levulose is considerably greater than the dextrose (levulose type) *granulation is retarded*" (italics ours). While what he says about the ratios of dextrose and levulose is undoubtedly true, how is it that he classes both mangrove and tupelo under the common heading of levulose type—that is, slow granulation? The pure mangrove honey, so far as we have been able to judge of it in a ten-years' experience, granulates about as speedily as any honey known, and is usually hard enough to form blocks within a month or less after extracting. Pure white tupelo honey will *never* granulate. It seems to us that mangrove has got into the wrong class here.

* * *

Honey needs to be well mixed and liquefied before bottling. Unless this is done, as Dr. Phillips has shown, *Beekeepers' Review* for December, some of the bottles will contain honey with a high per cent of dextrose, and some with an undue proportion of levulose. In neither case could the article be called pure honey. Beemen should be very careful in this respect, or they may unconsciously be guilty of violating the pure-food law. Mix and liquefy the honey well in the larger receptacle, before putting into the smaller container.

* * *

A REMEDY FOR ANTS.

Mr. C. E. Fowler, in the January number of the *American Bee Journal*, suggests a novel method for trapping ants. He sinks a metal tub, any size, into the ground near the apiary, and puts about an inch of water in the bottom. He says that the ants, in their efforts, apparently, to drink, fall in and can not crawl out. Try it, ye beemen troubled with these pests, and report.

IN olden times bees were robbed by their owners every fall. The old box used as a hive or straw skep containing the bees was set over a pit containing burning sulphur; and when the bees had been brimstoned—killed—the hive was turned upside down and the combs of honey dug out. The honey was pressed out of the combs thru a cloth. Since some of the combs probably contained unhatched bees, and others the slightly bitter, mealy-tasting pollen from the flowers, the "strained" honey was likely to have a flavor not quite all its own.

In the last fifty years a greater change has taken place in honey production than in all the former history of the world put together. Colonies of bees are no longer robbed by their owners and keepers. A normal colony in one season will produce on the average from 50 to 100 pounds more honey than the bees themselves can use. It is only this surplus of honey that men take.

THE MODERN HIVE.

Other conditions equal, a colony of bees will produce as much in the stump of a tree as in the best hive ever constructed. The only difference is in the convenience in caring for the colony and in removing the honey. The best hive in use today is a plain box without top or bottom, large enough to hold ten frames of "Langstroth" dimensions—which have come to be standard— $9\frac{1}{8}$ by $17\frac{5}{8}$ inches. The bees build the combs inside these frames, and, of course, the combs, thus surrounded by wood, may be moved about or lifted out entirely. This is the main difference between old box hives and modern hives.

The hive of ten combs constitutes the hive-body proper, or the brood-chamber. In this part of the hive the queen is kept

BEGINNERS' LESSONS

H. H. Root

LESSON I. THE HIVE.

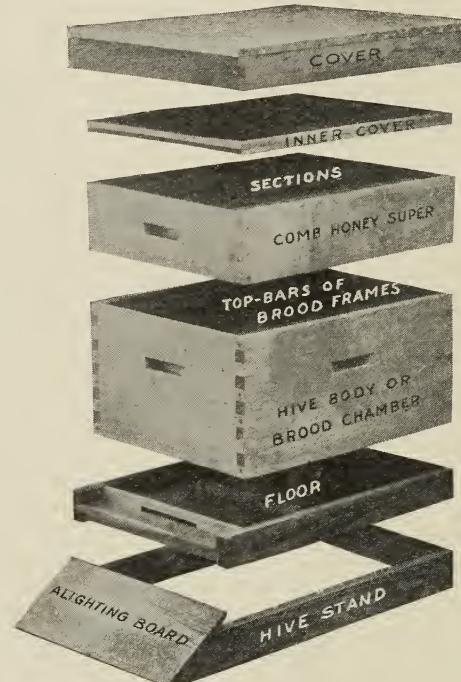
front, and underneath the floor the hive-stand with its sloping alighting-board from the ground up to the entrance.

Above the brood-chamber is the super, so named because it contains the *superabundance* of honey—in other words, the surplus over and above the needs of the bees themselves. If the honey is produced in the small square sections holding about a pound it is called a comb-honey super, and

is about half the depth of the brood-chamber. Sometimes this super contains frames exactly like the brood-frames below, except that they are shallower of course. Or the super may be the same depth as the brood-chamber, in which case the frames are identical with those below, tho they are for honey only, not for brood. Usually honey is not sold in the large-sized frames. It is separated from the combs in a centrifugal machine called a honey-extractor, or separator.

There may be from one to five or six supers on the hive at once. Above the top super is a cleated board called an inner cover, and over all a telescoping metal-roof.

If one desires to remove full supers of honey, a board exactly like an inner cover is slipped between the supers and the brood-chamber below, except that in the center is a trap called a bee-escape. The bees can then pass down from the supers into the brood-chamber below, but can not get back up again. By using the escape, in twelve to twenty-four hours the full supers of honey may be removed with scarcely a bee in them, and actually without the knowledge of the bees in the hive-body below.



P. J. A., Wis.—Should temperature readings be taken every day in the cellar where bees are being wintered?

A. If there are a good many colonies in the cellar, it is advisable to go in quietly, sometimes once a day and sometimes two or three times a week. Bees should always be inspected after a sudden change of temperature outside. If the bees are roaring, it may indicate that the cellar is too warm, and it may indicate a lack of ventilation, or both. Letting in fresh air at the cellar windows, preferably at night, will quiet down the bees. But it is desirable to let the air into an adjoining room before it is admitted into the bee-cellar direct. Fresh warm air directly from outdoors has a tendency to start up the bees. If let in at night it causes less trouble.

H. G. A., Ohio.—Do bees hibernate during winter?

A. Not in the sense that animals and some insects do. When conditions are normal they will go into a quiescent state, during which respiration is low, and activity practically nothing. When the temperature goes below 57 the cluster of bees will become active, and then the temperature will rise.

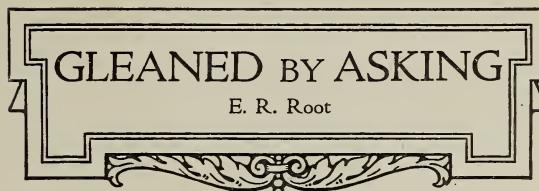
A. J. C., Pennsylvania.—Is there any wintering problem in the South?

A. While it is less cold in the South than in the North, bees sometimes die of exposure—that is to say, on account of insufficient protection, and a cluster too small, the bees will eat too much, and wear themselves out in going to the fields whenever the air is warm enough, with the result that the colony gradually dwindles. If a colony is strong and well protected there is no danger from winter loss except from starvation. The fact that bees can fly out almost every day in some localities in the South has a tendency to start brood-rearing, especially if they gather a little pollen or honey. When the colony begins to breed, they often consume more than they gather, with the result that the good colonies will sometimes be found starved to death. It follows, therefore, that the average colony in the South requires more winter stores than in the North.

G. A. C., Ohio.—What can a beekeeper do profitably during cold winter months, providing he has no other business?

A. He can nail up hives and frames, and clean floor-boards and hive-bodies that are covered with bee-glue. This can be done by using a hive tool or a putty-knife. He can melt up his old combs and render them into good marketable wax.

He can scrape and sort out sections according to weight, marking on the proper minimum and net weight, and then put each lot by itself. He can put his extracted honey



up in bottles or tin cans; and if he is a salesman he can supply the local demand before taking any to outlying towns.

He can read up the back numbers

of his journals and books on bees making sure he is familiar with all the developments that have turned up during the previous six months or year. The man who does not keep posted in regard to what is going on in his business will lose out. There is no better time for doing this than during winter.

Occasionally the entrances of the outdoor-wintered colonies will need to be cleaned of dead bees. Melted snow and ice may form over the entrances of some of the colonies, closing them entirely. While light snow does no harm, a wet snow that freezes and seals the entrances may kill the colony. There is a good deal less trouble of this kind in colder climates—where it is so cold, indeed, that the snow seldom melts during mid-winter.

When possible, a beekeeper should attend conventions within reach. He will thus learn enough about his business to pay him many times over for his hotel bills and railroad fare. If he is only a backlotter, and has only a few colonies, perhaps the returns in dollars and cents would not warrant him in incurring the expense; but he will derive a lot of pleasure in meeting those who make beekeeping their sole business.

G. F. Y., Iowa.—Does warm weather have a tendency to keep down the price of honey?

A. Some of the commission men have a fashion of saying in the fall that, as soon as cold weather comes on, the price of honey will rise. As a matter of fact, price often sags after the first of January, when the weather turns colder. During September there is a large quantity of fresh fruits on the market. As soon as these are exhausted the demand for honey, jellies, and jams increases; and, while the price of honey begins to rise after cold weather sets in, this rise is more likely due to the absence of fresh fruits on the market than to the weather.

C. E. S., Rockford, Ill.—1. Does the odor from common tarred paper irritate or injure bees in any way?

2. Would it be advisable to wrap a hive with this material about October 1, let it weather until about the middle of November, and then pack in the winter case?

3. Can a queen be introduced by the honey method to a nucleus just as soon as formed, or would it be best to wait ten or twelve hours until the bees have become quiet?

1. Not that we have ever been able to discover.

2. It is very often used for the purpose of protecting hives during winter; but if you expect to use winter cases we would put

these on the first thing in the fall rather than bother with the tarred paper in the meantime.

3. We would advise introducing a queen as soon as the nucleus is formed. There would be no advantage in waiting twelve hours.

G. A. C., Massachusetts.—Does a winter freeze kill all the eggs and larvae of the bee-moth?

A. Yes. Sometimes, however, combs in a building are not subjected to a freezing temperature. If there is a stove in the house, or if the walls are double, it may not be cold enough to kill the eggs and larvae. However, there will be no hatching of eggs nor development of the larvae during the cool part of the year. In the South, however, the bee-moth and its larvae can do much damage, because there is no freezing to kill them.

S. C. F., Indiana.—What makes a colony cross at certain times and gentle at others?

A. Weather conditions and the manner of handling the bees have everything to do with it. Bees are apt to be crosser when the atmosphere is chilly or immediately following a rain. But the gentlest colonies will sometimes become very cross after a sudden stoppage of the honey-flow, due either to honey-dew drying up, to rain, or to a sudden drop in the temperature when the nectar has slacked up. Colonies in the buckwheat regions, when the flow stops in the middle of the day, are crosser than when they are working on white clover at a time when the flow is light but continuous from morning to night.

Bees are often cross when working on honey-dew. The saccharine deposit from the aphides on the leaves of certain trees will be gathered by the bees during the morning hours. Along about ten o'clock, and from then on, this deposit either dries up or is taken wholly by the bees. The result is a sudden stoppage in the supply. This sudden stoppage always makes the bees cross. Bees that are robbing are not necessarily cross until their supply is shut off. Then mischief follows.

C. L., Altoona, Pa.—I have noticed that on sunny days my bees will come out on the snow only to freeze. I have my hives well protected from the cold winds by corn stover, but not in front. Would you advise me to put a fine-mesh screen (mosquito netting) in front of the opening of the hive to prevent them from coming out?

In the spring of 1914 I received a hive from a friend. I now have four hives, but I noticed they were quite restless last May, and swarmed considerably. I examined the hive to ascertain the cause, and found several cocoons of queens which I cut out. Did I do right? Do you think that I should obtain a new queen this spring to improve the stock?

A. It sometimes happens, when weather conditions are right, atmosphere warm, and snow on the ground, that the bees will fly out in large numbers; many of them will fall on the snow, and chill, never to rise again. If the snow is only a thin coating, melts away, and it is followed by another

warm day, these chilled bees will rise again and go into the hive; but when they fall on snow that is deep they will die.

The bees referred to had evidently started queen-cells; and as long as these were in the hive they would continue to swarm as the young queens prepared to emerge. You did right in cutting the cells out. It would be safer for you to get a queen of good stock rather than depend upon what might be raised in the hive.

T. O. S., Missouri.—Is it safe to use combs in which no brood has been reared, but which have been in a super over a colony that has had American foul brood?

A. While in most cases perhaps such combs would not impart the disease there is always danger of it. The only safe thing to do is to melt up every comb that has been in contact with bees that have had American foul brood. Combs that have been in a hive having European foul brood may be used over again, providing the disease has not gone too far, and providing that the beekeeper himself uses ordinary precaution.

J. A. S., Michigan.—Is the ordinary house cellar a good place to winter bees?

A. That depends. When the temperature goes below 40 and at other times goes as high as 60 to 65, it is a very poor place. Except for a few hours or a day or so the temperature should never go below 40 nor much above 60. If higher than the latter point, there should be a large amount of ventilation. If the winters are more or less open so that the bees can fly about every week or so during winter, it would be better to discard the cellar and winter bees outdoors in double-walled hives or packing-cases.

T. O. C., Tennessee.—What makes wax become dark during the process of rendering?

A. Wax from old combs will be darker than that from new combs. When combs are melted up in a galvanized receptacle they will be darker than if melted in a metal container lined with tin. Wax that is kept hot in a metal container for a long time will become dark, and it is, therefore, desirable not to keep it in a melted condition longer than necessary. Hard water has a tendency to darken wax more than soft. Wax should not be heated more than twice—first, in rendering it; second, in putting it in cake form suitable for market. Every time wax is heated it is darkened slightly.

R. A. T., New York.—I am a producer of comb honey. I am well equipped with a complete set of fixtures. I have had a fairly good demand for all I could produce. Would you advise me, in view of the strong demand for extracted honey and the sluggish demand for comb honey, to run for extracted next year?

A. We would produce more extracted honey. It would be a mistake to drop comb entirely, because a large number the coming season will run for extracted because the price of it is approaching more nearly the price of honey in the comb.

DR. Bonney was one of the interesting personalities at the Iowa convention. He is the man who has built up a trade-name for "Bonney's Honey." He is an interesting talker, bubbling over with good-natured comment.

Mr. Harold Horner, of New Jersey, will shortly describe his method of producing extracted honey in sky-scraper hives, five or six stories high, and wintering in two-story hives. He is one of the best beekeepers in New Jersey, and at the same time a large fruit-grower. He knows how to get a good crop of honey with a minimum of labor.

CAN YOU BEAT IT?

An interesting back-lot beekeeper is a neighbor of J. L. Byer, Mr. C. W. Hellem. The editor visited Mr. Hellem's apiary with Mr. Byer, securing the picture shown at the bottom of page 108.

Mr. Hellem, the living right in town, has a yard of 25 or 30 colonies. He started with two or three colonies which he ran for increase, but his main increase came from 20 one-pound packages of bees which he secured from the South, each having an untested queen. He hived bees on frames of foundation because he had no combs. From the two or three colonies he already had and the nuclei from the pound packages he took 2000 pounds of honey, built all the nuclei up to full strength, and now all the colonies are in double-walled hives in splendid condition for next season.

Mr. Hellem is quite a mechanic, makes all his own hives, and it is no wonder that his little yard is one of his proud possessions. He is thinking of the days when he shall be out of the store, out in God's free air, giving his entire time to the bees.

"DOUBLY BLESSED."

Mr. Wm. Couse, in his lantern-slide lecture at Toronto, when he came to the picture of our special correspondent, J. L. Byer, remarked that he has been doubly blessed during the past year. He had secured a crop of honey, about twice as large as he ever had before, and a pair of twins. When the editor called on Mr. Byer recently the latter remarked that we would "have a duet, in all probability," when we arrived at the house. We did



not know what he meant; but when we reached his home we found a fine pair of twins, and later on along in the night heard something in the nature of a "duet" from the aforesaid twins. They certainly can make their wants known, singly or in pairs.

The Northern California Beekeepers' Association held its annual convention in Sacramento Dec. 29.

There was a good representation of commercial bee-men in spite of the short crop. Pres. H. K. Hill, of Willows, and Secretary A. L. Heim, of Fair Oaks, were re-elected. E. L. Sechrist, of Fair Oaks, vice-president, Prof. Willis Lynch, of Stockton, and M. C. Richter, San Francisco, are the directors for the coming year. This is also the California branch of the National Association.

MR. ALVA AGEE.

Mr. Alva Agee, perhaps the greatest living advocate of lime for sour soil, formerly of State College, Pa., is now Secretary of Agriculture of New Jersey. The best part of it is, he is also interested in beekeeping, and to that end is doing everything in his power to elevate the industry in his state.

There are many localities in the state where clover cannot be grown because the soil is too acid; but a liberal application of lime will make the growing of clover and all other legumes possible. We may rest assured that Mr. Agee will see to it that the farmers of New Jersey will be properly informed as to the value of lime for the soil.

"GETTING FANCY PRICES."

Mr. R. D. Barclay, President of the New Jersey Beekeepers' Association, is a dry joker. He kept the convention in a perfect uproar of laughter while, apparently, all serious he told the members how he secured "fancy prices" for his black bug-juice honey; of how he sold it in gallon lots at \$2.50. It was not all a joke either, for he found that a large number of people, especially those of the foreign persuasion, really preferred a dark strong-flavored honey. He showed a bottle of the stuff so black that it was perfectly opaque. It seemed to be a combination of every flavor with a little

honey-dew, but of just such a taste as would suit some foreigners who have been using just that kind of honey in their native land.

He has developed a mail-order business, and actually had the nerve, he said, to send out samples of this blackstrap, and on these samples he made his sales. With a twinkle in his eye he said a gallon of it would "last a long time;" but he insisted that he had actually received repeat orders.

The National ought to have Mr. Barelay give them a good talk on getting fancy prices on bug-juice honey.

* * *

THE SHORT COURSE IN APICULTURE AT
ONTARIO.

Morley Pettit, Provincial Apiarist of the Ontario Agricultural College, has been holding a short course in apiculture, beginning Jan. 8 and extending to the 26th. The apicultural school at Ontario College is one of the best on the continent. The graduates under Prof. Pettit are making good. Mr. F. Eric Millen is a sample.

* * *

THE NEW JERSEY CONVENTION.

The New Jersey state beekeepers' convention, on Jan. 9 and 10, was one of the best meetings we ever attended. While the attendance was not large, the enthusiasm and general excellence of the discussions were of the very best. State Apiarist and Foul-brood Inspector E. G. Carr is secretary of the association. This is enough to explain why the convention was a success.

* * *

THE NORTH CAROLINA CONVENTION.

The state beekeepers' convention held at Winston-Salem, N. C., on Jan. 11, had the largest number present of any of the meetings that we have attended this winter. There were over 200 present at the opening of the meeting, and the enthusiasm was very high. The secret of this large attendance was doubtless due to the energetic efforts of State Entomologist Sherman, and to Mr. Geo. H. Rea of the government extension work. Mr. Rea was formerly Foul-brood Inspector of Pennsylvania; and it is evident that he is doing most excellent work in North Carolina. Both Dr. E. F. Phillips, of Washington, and E. R. Root, of Medina, were present.

* * *

DEATH OF WALTER S. POUDER.

Walter S. Poulder, of Indianapolis, Ind., well known to beekeepers all over the United States, died at his home Jan. 5. His death was not unexpected, as he had been slowly failing for a long time. He was a dealer in supplies, a good business man, and always prompt in his dealings.

He built up quite a large business, for he was a good advertiser, and the best ad. writer perhaps, among all the dealers in bee-supplies.

He had a very large circle of friends as well as business acquaintances. He was quiet in manner, always courteous.

During the later years of his life he labored under the handicap of being entirely deaf, and during the last year or so he was partially paralyzed.

* * *

F. ERIC MILLEN AT IOWA.

F. Eric Millen, Secretary of the National Beekeepers' Association, former apiarist and foul-brood inspector of Michigan, has accepted a position with the Iowa State College at Ames. He will take up entomology and beekeeping in particular. We have always regarded Mr. Millen as a good man. What will be Michigan's loss will be Iowa's gain.

* * *

A NEW BEE INSPECTOR FOR SANTA CLARA COUNTY, CALIFORNIA.

Mr. Earle L. Morris has been appointed inspector of apiaries for Santa Clara Co., California, one of the greatest fruit-growing districts in the world. Mr. Morris has been county entomologist for a good many years. A short time ago he was appointed Horticultural Commissioner, and in addition he is now inspector of apiaries. In certain sections of Santa Clara Co. foul brood has been very bad; and there is no doubt that Mr. Morris will be able to improve conditions materially.

* * *

THE DOMESTIC BEEKEEPER.

The old *Beekeepers' Review*, formerly published by W. Z. Hutchinson, and later edited by E. D. Townsend, North Star, Mich., has been changed into what is now called *The Domestic Beekeeper*. With this change has come an enlargement, better ink and paper, and better all around. Those who have any difficulty with poor eyesight will doubtless welcome the large type used. The change of name was "to make it a home affair," because it will be edited and published by one family, E. D. Townsend and family, North Star, Mich., and because it will be a "a home affair" for its subscribers. Its object will be to stimulate organization and co-operation. We wish the new old journal and its publishers success.

* * *

So far as we are able to learn, the judge has not yet rendered his decision in the case of the beekeepers versus the Coniagas Reduction Co., which was tried last November at St. Catherine's, Canada.

Mother Bee NURSERY RHYMES

By M.G.P. (Mother Goose Plagiarized.)

“Honey Bee, Honey Bee,
where have you been?
I’ve been to the hive
to visit the Queen!”



“Honey Bee, Honey Bee,
what did you there?”
I fed her and stroked down
her soft yellow hair!”

A Song of the Suburbs

BY GRACE ALLEN

Here where the near low curve of the country
Reaches the city's most rambling edge,
Here where the long hard lines of the pavement

Are lost in a tangle of wayside hedge,
Here where the clear-eyed air shakes his garment
Free from the soil of the toiling smokes,—
Here stand our homes, where a field-rim circles
The worn-out ends of the long street-spokes.

Here we have builded our neighborly houses,
Half in the country, half in the town;
Here we have greeted our neighborly neighbors

Over the fence as the sun went down.
Here we have planted our lawns and our lilac,
And smiled undismayed when the lawns wore bare,
For here are the faces of play-flushed children
Fairer than even green grass is fair.

Here when the morning is born in the stillness
Faintly comes floating the crowing of cocks;

Here in the springtime we cherish our gardens,
While faithful old motherhens hover their flocks;

Here when the summer shines over the clover
Swiftly our bees flash away thru the sun,
And here, while we thrill to their magical
humming,
We share in the wealth so exultantly won.

What tho no luxury graces our living?
We've laughter and roses and hives under trees!
What tho we labor from dawn till the darkness,
Eager, devoted, content—like our bees?
Life, in the fullness and glow of his vigor,
Is walking our every unpaved street,
And skies like the eyes of the Love that is
Heaven
Shine where the town and the country meet.

Pollen in Shallow-Frame Honey

Our market prefers bulk or chunk honey. We dislike to cut the honey out of sections for this trade, and have been producing it in the shallow extracting-frames; but the bees delight in storing pollen in these nicely drawn combs. We place our extracting-frames on, following the clover flow in order to get the foundation drawn out and catch what little

honey there is from mid-season flowers, such as sweet clover and heartsease. Ragweed blooms profusely about this time, and produces an abundance of pollen which the bees store in these frames and afterward finish up by storing goldenrod and bluevine honey on top of this ragweed pollen. If we keep the supers off till the fall flow comes on, it induces swarming. Can anybody suggest a remedy? We never have any trouble with this ragweed pollen going into sections —why?

The Indiana Beekeepers' Association should get busy this winter, and go after our law-makers to give us more inspectors. The state entomologist's office is badly handicapped for want of funds to protect this very important industry in our state. We are entitled to more recognition —let's have it. The State Horticultural Society and the dairy and stock industry are well taken care of, but we beekeepers are left out in the cold. Whose fault is it? We are not going to get the needed protection unless we go after it. There are 500 colonies of bees within a radius of five miles of my place, and foul brood rampant; yet we never have had a clean-up. It's discouraging, but I have hopes.

S. H. Burton.
Washington, Indiana, Dec. 16.

Quality of Stores or Lack of Protection

In the fall of 1915 a large stone wall north of my bees was removed. My protection gone, I moved the ten colonies to lower ground and made the little shelter I had time for. On the east was a low hill, but that was about all. The bees were in hives of the A. C. Miller plan with frames parallel to the entrance, half-inch super-cover on the hives, a super of dry leaves over it, and with deep tar-papered telescoping covers over all. The entrances were $\frac{1}{2}$ by 3 inch.

The apiary is on low land 100 yards from Palmer's River. Twice in the spring the water has almost reached the apiary. Our thermometer in the morning is 2 degrees lower than at neighboring farms; and to go in any direction one can readily see the difference of air on a cold morning.

Well, with 20 to 30 lbs. of stores I lost no sleep worrying about the bees; but in January we had ten days of mild weather which, no doubt, induced breeding. Then in February and March we had zero weather followed by a cold and wet spring. The colonies dwindled fast; and by uniting I had, on April 1, just one colony. There were two or three frames of dead bees in a hive, very odorous, with two or three frames of honey. Should I have extracted the stores and fed sugar?

Last year we had much clover. I bought

two nuclei of five frames, secured 150 lbs. of honey, and increased the one colony to five.

Rehoboth, Mass., Nov. 24. Robt. Elwell.

[Possibly it was a combination of circumstances, altho if the honey in the combs was not granulated we do not believe it was responsible for the loss. The unfavorable weather was probably the principal cause of the losses.—Ed.]

Still Another
Sting-proof
Bee-Veil

I should like to be of help to Mrs. Allen and to Mrs. Chadwick, who have referred to the matter of bee-stings. It seems to me it is foolish for a woman to expose herself to bee-stings unnecessarily. I know it is not so convenient to work in protecting garments; but the feeling of security that such garments impart is very comforting to me. I fear stings, not because I have ever had any alarming experience with them, but because they are uncomfortable for a time.

If Mrs. Chadwick loves to work among the bees, why does she not protect herself thoroughly and keep on working? I am convinced that no one is ever wholly immune; also that the condition of the person and the point at which one is stung has a great deal to do with the effect of the poison. The worst experience I ever had was one very warm day. I was quite warm, having been working in the sun for some time. Just one bee stung me on my ankle. It did not make me ill, but it was swollen badly when I came to care for it, and it continued to swell and pain me, the angry red of the inflamed part being twice the size of my two hands, and this did not abate much for about a week, and was very painful. I attribute the trouble to my being so heated, and to allowing the sting to remain in the wound for so long a time. I shall wear high shoes when working with the bees, and be careful where I put my foot.

I purchased a globe bee-veil when I first handled bees, but I was apt to get tangled in some way that would break the mesh of the veil, and it didn't take me long to learn that a bee could find the break much easier than I could; and one bee inside the veil is worse than a dozen with no veil on. I now have a veil that will not tear. I took a strip of galvanized wire screen (I prefer this to black), 14 inches wide and 34 inches long. I joined the ends with wire threaded thru and thru, covered the top with white cloth, and joined the lower edge firmly to a long low-necked over-the-head white garment with long sleeves and a belt. Mine comes nearly to my shoe-tops, but the length does not matter if long enough to belt firmly so no bees can crawl under. In the sleeves I made thumbholes, buttonholed, to slip over my

thumbs to hold them down. I failed to find rubber gloves to fit me, so I sewed a pair of white stocking-tops to the wrists of a pair of cheap canvas gloves—not too snug a fit—melting some beeswax, and gave them a good coating of that, and put rubber cord in the top. It takes but a moment to put this regalia on over my head, and, when taken off, I put garment and gloves inside the wire and know just where to find them, for it would be hard to lose the screening veil. I am safe with this on, and I feel safe.

I made one veil 12 by 36. It was two inches too large around the neck; had a tendency to slip down over my shoulders, and was too low on the head. Fourteen inches raises it clear from the head. I stick a hatpin thru wire and hair to hold it firm.

Glover, Vt.

Jean White.

Few Beekeepers
are Real Good
Book-keepers

A book-keeping bee-keeper is likely to be a successful beekeeper, and more might keep books if less writing and time were required. The smaller beekeeper might well keep a record of each manipulation of each colony, and thereby learn much. I speak from experience.

In the beginning I found such a dairy required no little time; but gradually I have devised abbreviations as occasion suggested, which have lessened the work and increased interest and satisfaction in the record. At all events, for the sake of general understanding, such a glossary may well be standardized and used wherever convenient.

The following abbreviations have pretty well served my needs:

| | |
|---------------|---------------------|
| H. (capital) | Honey |
| Q. (capital) | Queen |
| Qrt. | Queenright |
| Q'less | Queenless |
| Qc (s) | Queen-cell or cells |
| Bd. | Brood |
| Dr. bd. | Drone brood |
| W. bd. | Worker brood |
| Sbd. | Sealed brood |
| C. (s) (cap.) | Comb or combs |
| Fr. (s) | Frame or frames |
| S. (capital) | Super |
| ½ S. | Half-depth super |
| Fl. d. S. | Full-depth super |
| Mt. | Empty |
| Ex. | Excluder |
| Es. | Escape |
| Ch. | Chamber |
| OK. | All right |

Explanation:

Whenever a single letter is used alone, entirely, it should always appear as a capital; example, A, H, C, S. Plurals are indicated by adding a small (s); if to follow a final

(s), put a dot between; example, Fl. d. s. s. When several abbreviations are strung together, put a dot after each to avoid confusion; example, No. 13 Q. Iss gave Qc + 2 frs. sbd & H. Took 2 frs. mt. C. Other abbreviations will no doubt suggest themselves to those who may take up these suggestions.

Lyndhurst, N. J.

B. Keep.

The Wild Sunflower

The plant referred to as giving the yellow honey, page 1085, Nov.

15, is the wild sunflower of Florida, commonly called jiggerhead, also blackeye Sue. The center part is black. It flowers for 3 to 8 weeks. The honey is yellow, and of fine flavor. It granulates quickly. Bee-keepers will do well to get some of the seed and get it started in their marshes. It will bloom after the water has risen on the stalks a foot or two.

C. H. Clute.

Sanford, Fla., Dec. 1.

The Growing of Sweet Clover in Llano County, Texas

Will sweet clover grow in our portion of the state? The land is a deep-red sandy loam—more or less stony. We are subject to long-continued drouths, sometimes lasting for months. Some of the land has been in cultivation for 30 years or more.

Llano, Tex.

L. B. Smith.

[The above inquiry was submitted to Mr. Frank Coverdale, Delmar, Ia., who replies:]
No doubt there will have to be special methods used in starting the crop, such as feeding at the right time, and covering sufficiently deep to insure growth. The feeding should be done at a time when sufficient rains will be likely to follow in order to give the young plants time to root sufficiently to withstand the oncoming drouth. A seed-bed mulched and firmed will best suit such a locality.

It is not always possible to secure a stand on land by sowing on the top of the ground, on account of severe drouths which will affect the hard uncultivated ground just that much worse. A little experimenting is necessary in semi-arid regions, even where success has been attained by the growing of a stand from seed scattered off from a former stand.

When a stand has once been secured it will be easier to get the next, because the large long roots will have broken up the sub-soil and left deep cavities to be filled up by heavy rains, so that the water is stored below, to be used later during severe drouth.

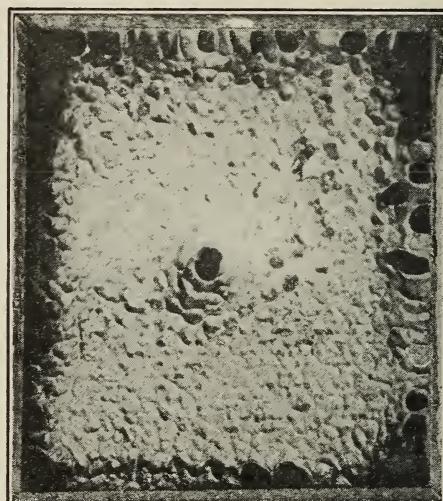
I would suggest that Mr. Smith plow a field, and, just before a rainfall is due, harrow the ground thoroly, then drill in, one

inch deep, ten pounds of scarified sweet-clover seed per acre without a nurse crop. I believe that this clover will be resistant enough to make good in his locality, especially if the one growing it is determined to succeed.

Freak Bees that

Made Sections
"Wholly Holey"

This new "style" of comb honey is a product of one of my best colonies (pure Italian) the last week in June. With three comb-honey supers almost finished (one finished had been taken off) the bees did a very foolish thing—cast an immense swarm, I put the swarm in a new hive with full sheets of foundation, removed four frames, and gave them, instead, four of their brood-frames. I then put them on the old stand with the three supers on top; removed the old hive to a new location, cutting out all queen-cells but one and giving them the four frames of foundation. With their new queen they built up in a ten-frame hive ready for the September honey-flow.



Two supers of sections, each with a hole in the center of the comb.

Here is the result. This section is one of 28 built in an N super with clean fences between each row of sections. Every one of the 28 had a hole thru it, all very much alike, all near the center. I put on top another super, as this one was about finished. A part of the sections were pretty well drawn out, and in each one a hole was made as in the finished super. In all these the bees cut thru the foundation sheets. There

HEADS OF GRAIN FROM DIFFERENT FIELDS

are no holes in the four brood-combs that they built.

This queer work has been very interesting, and a great puzzle to me. As it was in the cool part of the season the holes were not for the purpose of ventilation.

Wichita, Kan.

O. J. Jones.

Do Bees Dump Granulated Honey in Front of the Entrances?

I notice in S. H. Burton's article, "A Good Showing for Combless Bees from the South," page 1121 of the December number, that he says, "It is pure waste to try to carry this honey over in uncapped sections, as it soon granulates; and if put back on the hives next spring the bees carry it out and dump it in front of the hive." Is it always true that granulated honey is carried out in front of the hives? or is this true only when uncapped as Mr. Burton states? For the winter of 1915 I used three or four hundred pounds of capped granulated honey for winter stores, using two to four frames in each hive. Altho each colony had at least fifteen pounds of this granulated honey, I did not notice any honey carried out in the spring. I was told by a prominent beekeeper of this locality that granulated honey would be reliquefied by the bees in the spring as fast as they needed it for food, provided they could get water at the time. Is this not true? or is it carried out in front of the hives as Mr. Burton states? or do factors enter in so that either may be expected?

I think Mr. Burton refers to comb-honey sections; but would there be any difference between comb honey and extracted frames under the same conditions? Wells Rose.

Sunnyside, Wash.

[It is not always true that granulated honey is carried out in front of the entrance in the manner stated. A good deal depends upon the kind of honey, how solid and dry it granulates. If it granulates moist, and stays so thruout the winter, particularly if it is capped over, the bees are not likely to carry it out; but if the honey granulates solid so that it is in a dry granular condition the bees may or may not carry it out. If there is plenty of moisture in the hive so that the honey is softened up a little they will let it remain.

As to whether the bees reliquefy granulated honey we have our doubts. They may add water to it and soften it down, but it would not be the same as honey that has been heated to a temperature of 125 or 160 degrees until it is brought back to its original liquid condition. Any granulated honey can be made soft and liquefied to a certain extent by adding water to it, and this the bees undoubtedly do, or, rather, they

add their saliva, and it is possible they may at times add water to it, softening it down so they can use it.

Honey in uncapped sections is much more likely to granulate than when the cells were sealed over.

There would be no difference between comb honey in sections and that in regular brood-frames.—Ed.]

The Distance Bees Fly Depends Upon the Bees

I have been experimenting with different strains of bees for several seasons in the effort to find out the distance they fly and gather honey. I have found some of my bees over four miles away, while those from other strains are not found over a mile from the hives. I think the difference is in the strain of the bees more than in anything else. The hives containing the bees that fly a long distance are very heavy in stores, while those with the short-distance bees are light.

Central City, Ky.

E. C. Frazier.



Digging 'em Out.—Photo by F. J. Lillie, Cory, Pa.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Beekeeping to the Front in Northern Wisconsin has been very profitable. One beekeeper with a start of 26 colonies in the spring increased to 42 and extracted 5000 pounds of honey. He has a small farm of 15 acres, and runs the bees only as a side line.

Another with a start of only 9 colonies increased to 22 and took off 600 pounds of comb honey. There are many others that I might mention.

In August, State Inspector France was here and we organized the Northern Wisconsin Beekeepers' Association with a membership of 17. In coming together on a co-operative basis we find that it is much to the advantage of all members, both in buying supplies and in selling honey.

The county fair association granted us the use of a booth for display this last fall—the first display of honey products ever made here. It was a great attraction to all

classes of people, and very instructive at the same time, as we had a glass hive of bees and an exhibit of extracting-frames, comb-honey sections, and extractor to show the people how the honey was taken from the comb, thus proving that it is not strained honey.

One exhibitor had one-pound glasses and ten-pound pails. These we sold. A lady visiting the fair from Minneapolis bought a glass jar, took it home, and in a few days ordered 20 five-pound pails shipped C. O. D. She had taken orders among her neighbors. This shows that it pays to advertise.

The fair (Langlade County) was run on the free plan this year as an experiment, and was a success, both in point of exhibits and attendance, also in a financial way. No charge was made except for concessions. The same plan has been decided on for 1917.

The bee industry is getting to the front very rapidly, and I think that by next year many more farmers will take an interest in bees.

Antigo, Wis.

E. H. Marsh.



THE BACKLOT BUZZER

BY J. H. DONAHEY

Speaking of successful wintering, Benny Sourweed says he generally adopts a course somewhere between the feller who keeps his bees in a nailkeg and the beginner who stopped up the entrances with a rag to keep 'em from freezin' to death.

DEAR SIR: —
Some one said you knew "how to be happy when people abuse you." Do you mind telling me?

DR. C. R. LYTLE.
McPherson, Kan.

On examining the letter - head containing the above plaintive request I found the following:

"Dr. Clinton R. Lytle, County Health Officer, McPherson, Kansas."

The fact that the good doctor has been appointed *health officer* affords us the clue as to why he wants to know "how to be happy," etc. My dear doctor, I am glad to tell you (and I hope I speak the truth), that I *do* know how to be happy when people abuse me. I know *how*, but sometimes it takes quite a little spell to "pull myself together," if you will excuse the expression, and put in practice this knowledge.

If any of the readers of GLEANINGS have ever undertaken to discharge faithfully the duties of such an office, they can, perhaps, realize the good doctor's predicament. Unless one possesses a wonderful gift of tact, and has a deeply rooted faith in the Lord Jesus Christ, it is not an easy matter to undertake to interfere with the way in which people manage their domestic matters in their own home. But, on the other hand, if a public officer would shirk responsibility, and let everybody go scott free, no matter how much such parties were annoying or injuring the community, he might have an easy time of it, unless, indeed, somebody on the other hand should grumble because he did *not* enforce the law. Those who never undertake to serve the public have little comprehension of the trials that meet any one who insists on the strict enforcement of law. You see enough of this in temperance work. Under the circumstances do you wonder that good men refuse to accept important offices? and yet what will be the result if bad men—say men who would willingly accept a bribe—are permitted to fill these offices? Well, how is it possible, considering the above, to be happy when you are abused and found fault with for doing your duty? I know of no way but to avail yourself of the Bible promise—keep quiet and gentle while you insist that each man and woman shall obey the law and do their duty. Look pleasant if you can, but do not listen to Satan when he persists in keeping



Blessed are ye when men shall hate you, and when they shall separate you from their company, and shall reproach you, and cast out your name as evil, for the Son of man's sake.—LUKE 6:22.

you stirred up by the remembrance of the indignities.

Years ago in our teachers' meeting this very matter was being discussed about being abused for righteousness' sake. I ventured the remark that somewhere in

the Bible it says not only "rejoice and be glad," but it says also, "and leap for joy." The superintendent of the Sunday-school said, "Mr. Root, I should like to know where you will find that passage in the Bible." Then the rest began to laugh; and the pastor of our church, I think a "D. D.," led the laugh, and suggested that I must have found that extract somewhere else than in the Bible. As I was a comparatively new recruit at the time in the Sunday-school work and teachers' meeting, I felt a little sore about it; but before the meeting closed I arose triumphant and read to them the verse just following the one at the head of this Home paper. There we have it in plain black and white—"Rejoice ye in that day, and leap for joy." Of course we do not understand that we are to leap for joy in the presence of those who have abused us; but when you get off away by yourself, and the bitter words that have been used toward you are still rankling in your heart and brain, then is the time when you can shout praises, and perhaps leap for joy just because it has been your privilege to be persecuted as were the good people who, perhaps ages before, were subjected to a like experience.

Let us now have the remainder of the 23d verse of the 6th chapter of Luke:

"Behold, your reward is great in heaven; for in the like manner did their fathers unto the prophets."

Those who consent to appointments to public offices, especially the offices where they are supposed to look after things disinterestedly for the good of community, will understand how often they are criticised and abused by one class of people for doing their duty, and perhaps at the same time are criticised by another class because they do not do more of the same thing. What shall we do under the circumstances? Go straight forward; take time to explain gently and kindly that you are a servant of the public, and that what you do

is for the public good. Make for peace with those who abuse you, if possible. Great things are possible, as I know by experience, if you succeed in not getting ruffled up and preserve a kindly demeanor. I know how hard it is, and sometimes I think it almost impossible to keep cool when I am unjustly criticised. But at such times hold fast to the little prayer, "Lord, help," and it will not be very long before you feel the presence in your heart of the Holy Spirit, and it will almost seem to you that the dear Savior is near, the all-powerful Friend who has said, "Lo! I am with you alway, even unto the end of the world."

Just recently a man passed thru our town at a reckless speed. The children were out on the street because the weather was very warm. He was flagrantly breaking one of the town ordinances regulating speed. Two men called on the man after it was all over, and ventured a remonstrance. They did not threaten to have him arrested, but suggested to him that he was *liable* to arrest if he continued to ignore the ordinance in regard to the speed of automobiles.

"Personal liberty" has been talked a little too much; and perhaps all of us need reminding to keep us loyal to the ordinances that are passed by our towns and communities, that it is a Christian duty to stand up and encourage the officers of the law.

Of course we mailed our good friend a bundle of the little tracts that have often been referred to—"How to be Happy when People Abuse You;" and we stand ready to furnish still more of them to those who are interested in the matter.

In our morning reading we came across the following that comes a good deal along the same line. You will remember that after Jesus sent out the seventy, as we are told in Luke 10:17, they all returned with great joy, saying, "Even the devils are subject unto us in thy name." But the Master replied later on in the 20th verse as follows: "In this rejoice not, that the spirits are subject unto you; but rather rejoice because your names are written in heaven."

After reading the above I fell to thinking of this matter as I had never done before. With all our trials and worries and persecutions we have a right to rejoice and be glad, *because* our names are written in the long list of those who have gone before us in ages past, because they loved righteousness and hated iniquity. As I grow older I meet with great and good men and women. It is often a happy surprise—a surprise that gives me a thrill that I cannot describe, because I am recognized as a co-

worker among good and busy people. At a recent Chautauqua gathering, as I handed in my ticket the manager said that Prof. Montraville L. Wood had sent a special request to see me. When I found him he said something as follows:

"Mr. Root, my father was a beekeeper and took your journal. I had heard him talk so much of you in your earlier years that I thought it would be a great pleasure to meet you. I know something of your early experiments in bee culture, and I remember how you decided to give your inventions to the world rather than to get out patents on them, etc."

The professor gave us some wonderful experiments with the gyroscope, and told us how after the invention has lain idle for over *forty years* it is now proving to be a great blessing to the world; and among other things he said the recent successful trip of the Deutschland under the seas would not have been *possible* had it not been for the gyroscope taking the place of the magnetic needle. The gyroscope was invented in 1852, when I was twelve years old. I saw an account of it in the *Scientific American*, and soon after that I made one that would work. When I was sixteen years old I was going around lecturing in country schoolhouses, as I have told you; and besides my electrical home-made apparatus, I exhibited a home-made gyroscope. I have already made allusion to the "gyro compass" that was for several years under the care of my nephew, Mr. Homer Root. Now you can realize from the above what a thrill it gives an old man to find out, after years have gone by, that he was a co-worker and had a hand in ushering in to humanity some of the great and wonderful inventions of the age! If that be true, how much more is it true of the one who has spent a lifetime in holding up to a suffering world the glorious victories that are possible as a result of spreading the "glad tidings" of the gospel to a sin-sick and suffering world?

"WHOSOEVER SHALL GIVE YOU A CUP OF WATER."

Mr. A. I. Root—Thy favor and package of "War on Christian Principles" was gladly received, for our heavenly Father lets me "live by the side of the road and be a friend to man." People stop for a drink when they see our pump has a cup, and sometimes water their horse; and even automobiles have to have water too, and I am always glad to give folks something to read that will do them good—so many opportunities I find to distribute "How to Be Happy when People Abuse You," too.

I gave two of our soldier boys a copy of just one of the Evangelists, Matthew and Luke, and we hear that one claims to have taken a firm stand as a Christian since going to camp, and he writes he

knows of but one Bible in the camp, so he prizes his booklet.

The liquor interests have named their present effort "here-a-way" (Home) Rule. They have organized what they call Home Rule League for Michigan against statewide prohibition. "The Lord can provide in his own time and way." He does hear and answer prayer.

Later (Aug. 11).—I am almost out of "How to be Happy," etc. I think it certainly will be a real peacemaker in small villages where they have "eruptions" in their "aid societies." Oh! why do they? What is wanted is more spiritual power. Will more machinery and more hurrah get it?

Not ever more within that hive.

RHODA C. W. DERBYSHIRE.

Ypsilanti, Mich., Aug. 11.

My good friend, you have given me an idea that I never had before—that is, a drinking-place "by the side of the road." as an opportunity or a medium for the

distribution of tracts. Thruout a large part of Michigan, and especially where there is sandy soil, the water is beautifully clear, soft, and pure, as a rule; and drinking-places for both man and beast are quite common by the side of the road. Your quotation from Sam Walter Foss about living "by the side of the road, and being a friend to man," comes in very nicely. And when the saloons are done away with, may God help us to realize the importance of having good pure water, easy of access *everywhere*, nor only for horses and men, but for automobiles also, as you suggest.

Your mention of aid societies makes me think of Pollyana and her "ladies' aid" as she called it.



HIGH - PRESSURE GARDENING

Whatsoever a man soweth (or planteth), that shall he also reap (or dig).—GAL. 6:7.

He that soweth to his flesh, shall * * * reap corruption.—GAL. 6:8.

OUR FLORIDA GARDEN.

We are just now almost at the close of 1916, having most beautiful growing weather, altho we had quite a smart frost about the middle of the month. However (much to our surprise), it did almost no damage on our grounds. Today, Dec. 28, the temperature is close to 80, the wind in the south, and the little summer shower in the night makes everything most beautiful this morning.

For nearly 75 years I have been curious as to *how* plants grow. Do they grow by jumps and jerks, or just gradually? This morning for the first time I have *nearly* "caught them at it." Some radish seed had been sown in a cold-frame, and it was time for them to come up. At 8 A.M. the crust over the seeds was unbroken. An hour later it was heaved up and cracked open, showing it had moved upward a quarter or nearly half an inch. Did it come up gradually, or all at once? Well, I am not quite satisfied; but my impression is, the growing plant kept pushing and gathering strength until the soil above gave way, and then the ground may have lifted up *almost* at once.*

Do you ask why one wants a hot-bed or cold-frame down in Florida? Well, we had a couple of weeks in November and December when a cold-frame with *glass* to cover was a big help. Listen! I wanted sprouted potatoes to plant at the very earliest possible moment. I spread them out in the sun, covered them with wet sacks, etc., but nothing worked like the glass-covered bed. We had terribly cold north winds about the time of the zero weather in the North. By managing the sashes we got the ground inside warmed up, and by blanketing at night we *kept* it warm; and when it came fit weather to plant outside we had "potato sets" with not only green leaves but with a mass of roots, some of them bigger than your hand. The small space inside the frame was made very rich with poultry droppings and fertilizer, and each piece of potato with its mass of roots carried a lot of rich soil with it, so the potatoes were really "up and growing" *the very day they were planted*. Now, here is a lesson for the good people up north while potatoes are close to a dollar a peck. Use hot-beds, cold-frames, or greenhouses in the way I have indicated; and when the weather and soil are ready for potatoes outdoors you can have you crop almost half grown.

Here is another advantage: I just paid \$7.00 for a sack of 10 pecks of Maine-grown Red Triumphs for seed. Some of these were quite large. We spread them all out in the cold-frame and covered them with an inch or more of rich sifted soil. In a little time the big potatoes with the rest sent up

* A chick in an incubator may pip the shell and then do nothing more for 24 or even 48 hours; but all this time it is growing and gathering strength for the final grand climax, when it bursts its brittle shackles and kicks its way out into the new world. Is it not, to some extent at least, the way with plants?

great strong sprouts, sometimes only one sprout from the end. This sprout, with a portion of the potato with it, was cut out and planted, while the rest of the large potato was put back. In a little time the other eyes formed good sprouts also, and in this way we secured from one large potato a good strong sprout from almost every eye; and it was not only a "sprout" but a potato-plant with leaves and roots. I have some potato-beds where one row was set with *potato-plants*, and the rest of the bed was planted with seed potatoes in the usual way. These beds are a great astonishment to visitors. Years ago, as some of you may remember, in a manner similar to the above, I increased one single potato to a *whole barrel* in a single year. This potato was "Maule's Early Thorobred." When my report came out in *GLEANINGS*, Everitt, the Indianapolis seedsman, copied it in his catalog as a description of a new potato he had just brought out.* Of course I made a vigorous protest and referred the whole matter to Maule. Everitt's excuse was that his potato came from the same source as Maule's, and really was the same thing. As my neighbor T. B. Terry had on his grounds the Thorobred from the beginning, I knew this could not be true. It was in one sense a cool piece of *forgery*; but Maule advised letting it drop, as it would make a legal tangle, probably, to take it up. Why do I go back to it here? Because the *Rural New-Yorker* of Dec. 23 contains the following:

SENTENCED TO PRISON.

James A. Everitt, 68 years old, Indianapolis, using the mails to defraud, eighteen months in Atlanta prison.

The above few lines tell in the fewest words possible the culmination of a life record of deception, hypocrisy, and dishonesty practiced by a man having every opportunity to achieve wealth by honorable means.

"Whatsoever a man soweth, that also (in time) shall he reap."

THE DASHEEN; MORE ABOUT IT.

The tubers are now on sale in our groceries here (in Bradenton) at about half the price of Irish potatoes. We clip the following from *The Jacksonville Times-Union*:

The agricultural branch of the federal government has been endeavoring for several years to make a new article of food popular. It is a vegetable which is eaten today by a larger proportion of the world's inhabitants than any other, comparing with rice among the cereals in that regard. Moreover, it has been an article of food in the tropics since time immemorial under different names, but has been brought to the attention of the American public only in recent years. It is probably un-

known in Europe, except among those who have traveled in the tropics.

The dasheen, we learn, is now actually in demand to a limited extent, and that demand is growing. The limited commercial demand bids fair soon to outstrip the supply, and its cultivation along the gulf region and as far north as central Georgia and Alabama will soon be profitable. It is a crop particularly adapted to Florida, one yielding 300 to 400 bushels per acre under ordinary conditions, sometimes between 500 and 600 bushels. It is an esculent that has won favor wherever introduced.

Its corm, the principal part eaten, is superior to the potato, which it resembles in some degree. To the flavor of the potato it adds that of the chestnut. It contains 50 per cent more protein than the potato, and considerably more starch. It is far more digestible than the potato, and for that reason is the favorite food for convalescents in the countries where it is a staple article of diet. This superiority of digestibility is said to be due to the smaller size of its starch grains which are to those of the potato, according to one comparison, "as a pebble to a cobblestone." Those who have eaten the young shoots, when blanched, pronounce them exceeding those of the asparagus for delicacy of flavor.

Something resembling potato chips is made by slicing very thin the corm, sometimes erroneously termed the "root," and cooking the slices as potato chips are made, and this is a favorite delicacy among children where it has been introduced, we are told, on account of the nutty flavor.

We direct particular attention to this crop and the growing success of the government in introducing it to public attention because of the adaptability of its culture to Florida conditions. Florida farmers make large sums thru supplying the markets of the country with the earliest new potatoes in the spring. A vegetable maturing late in the fall, and which produces so abundantly, would admirably supplement the early spring potato crop. The belt in this country thruout which it can be successfully cultivated is quite narrow, but includes all of Florida. As a means of adding to the resources of Florida truck-growers and the wealth of the state the dasheen is of great promise.

I clip the following from the *Florida Times-Union*:

But few dasheens have been dug here so far. J. J. Schmidt has a two-acre field, from which he estimates that the yield will be four hundred bushels. He has been digging them for several weeks and is finding a local market for them as fast as he cares to dig them, and he thinks he will be able to dispose of the entire crop locally. The exceedingly high price of potatoes this year, together with the high price of wheat and flour, it is thought, will be a big factor in introducing the dasheen to more general use. If dasheens are put on the market at a slightly lower price than potatoes, or even at the same price with them, it is thought that many people will buy them in preference to potatoes; and, after an introduction, it is thought dasheens will be able to hold their own in competition with potatoes.

Dasheens, being a crop that will keep almost perfectly in the ground until their growing season in the spring, are one product which the grower does not have to rush to market or even rush to harvest, and the prices, once established, are likely, therefore, to remain quite stable.

Let me repeat that I have dug a heaping half bushel from a single hill that had been growing right along for two years. The tops (also edible) would have made another half bushel or more.

* He used my words and my name without authority or even knowledge on my part, to boom a potato I had never even heard of.

POTATOES AND STRAWBERRIES.

If any reader of GLEANINGS grows the Wall's Orange potato (a variety introduced some 30 years ago) I shall be indeed grateful if he will write me. I am very anxious to get a little of the seed. I have long tried to find it, but all in vain—so I appeal to you. By the way, I had a few ripe strawberries today, picked in the open garden (Dec. 8). Who can beat that? There are many green berries on the vines, and considerable bloom. Surely there never was another such strawberry as the *Progressive Everbearing*.

On Oct. 15, on a single spring-set plant I picked 40 nice ripe berries; counted 69 green ones and lots of bloom. Hundreds more were about as good. All these plants had been bearing abundantly ever since July.

Success to you and the new GLEANINGS.
Hyde Park, N. Y., Dec. 8. A. T. COOK.

A FLORIDA BEEKEEPERS' MEETING HELD SEMI-MONTHLY.

We clip the following from the Manatee River *Journal*:

YANKEE BEEMEN AND CRACKERS MEET AND TALK THINGS OVER.

The beekeepers of the North, on the approach of cold weather, swarmed out and took a beeline for Bradenton for more congenial climate and lit on the front porch of J. J. Wilder's residence in the western part of Bradenton.

This swarm from the North met quite a number of local beekeepers; but as they did not come to rob them of their store of honey no disturbance was made. Some delay was caused by the late arrival of some of the beekeepers; but Kingbee Daniel Johnson finally succeeded in getting them all hived and proceeded with the program.

The purpose of this meeting was to get the ideas of different beekeepers in this vicinity as to the best methods to be used in conducting an apiary. These meetings will be held once every two weeks, on Friday afternoon, until the Northern beekeepers take their flight at the end of the season.

Next in order was a paper by Mr. Rees, entitled "Beekeeping in Manatee County, Compared with California and Texas." Mr. Rees held to the view that this section is superior on account of the freedom from diseases, but admits that the dragon-fly is troublesome near swamps.

Mr. A. I. Root, the veteran beekeeper of 70 years' experience, gave an excellent talk on his early experience in starting in the business; how he received nothing but ridicule from his friends when he paid twenty dollars for an Italian queen; but when the colony that she raised produced a barrel of honey in one season (not a barrel of money), the laugh was on the other side. His sons and sons-in-law have built up a business that is the largest in the world in bee supplies, and handles more honey than any other firm. Mr. Root is also an expert gardener, and has in one year raised a barrel of potatoes from one seed potato. His gardening methods might be employed now to a great advantage, potatoes are so high.

Mr. J. J. Wilder, who did not have to fly so far—only from Cordele, Ga.—gave his method of marketing, and preferred to sell to jobbers. His apiaries in Georgia produced 144 tons of honey and sold one man six carloads of his product.

I don't know of another town that has so many heavy-weight beekeepers as Bradenton now has. It must be that it possesses superior attractions.

Daniel Johnson, of Cazenovia, N. Y., who was chairman of the meeting, is a beekeeper of wide experience—also a very successful queen-raiser and potato-grower.

Edward Reddout, of Lysander, N. Y., was present, and had a paper on honey production and queen-raising combined, claiming that it could be successfully done. Ed is like Dan—raises queens for other people, but has none in his own apiary. Ed is building a hive.

Your correspondent was around among them and never got stung, but may not fare so well after this article is published.

Bradenton, Fla.

W. N. REDDOUT.

The above report is from Mr. Edward Reddout's father; and the father's remark about a queen-breeders who has no "queen" in his own apiary probably refers to the fact that the son is as yet unmarried, altho he is now building a "hive."

GOATS AND GOATS' MILK, ONCE MORE.

Dear Brother Root:—Thanks for publishing my communication regarding milch goats, p. 1138, Oct. 15. I guess I "have started something" all right. It has brought letters of inquiry about milch goats from all quarters of the United States, and still they come. Every inquirer so far has been thoughtful enough to inclose a stamp. That is a little unusual. I consider I am doing some substantial missionary work in getting any one interested in milch goats, especially where the aged, invalids, or infants are concerned.

As to the "smell," this comes from the male. He should not be kept with the does giving milk. The does and kids are far cleaner than the cleanest dog or cat, and there is no comparison with a cow. I pet and rub my goats, and the kids climb all over me and nose all my pockets to see if perchance I have a pear concealed about me; and no one could tell I had been about the goats from any odor I carry from them. The "uncouth-looking" ill-smelling goats you refer to were "woolloomooloos," or just goats, and no doubt the males ran with the flock. Even some of those does make fair milkers, and are odorless if kept away from the males. As to their looks, my goats are just grades; but their white coats, clean appearance (no grease as with sheep), deer-like build, and gazelle-like actions attract the attention of all passers. Every one admires them. All I have claimed, and much more, is true of goats and their milk. Cheese? Sure! Some of the best and most expensive cheese are made from goats' milk. It is easily made too. If you encourage a discussion of goats and their products I am sure every aged person, invalid or mother, who is induced to use goats' milk, and especially for infants, will rise up and call you "blessed." It is the only real substitute for mothers' milk—the most nourishing and most easily digested food for the aged and for invalids.

The big goat you saw in Michigan was, no doubt, a Nubian—a large breed, good milkers, but very expensive; said to be short-lived, and not to stand the cold well.

Some goats have horns and some have none. Some of mine are hornless. I think they are a Saanen cross on Spanish-Maltese on common goats. Milk goats are not so plentiful that they are easily obtained, and pure breeds are prohibitive in price. The practical way is to obtain common goats—the best milkers you can get, and breed up. It is not so hard nor expensive to get pretty good males.

If you could see a bunch of my kids, about two months old, at play, then see them mob me at feeding-time, and see how very smart they are, and how nearly they can talk, you would agree with me that they are the dearest, cleanest, most enjoyable of pets, and anything but uncouth-looking. Then

just think of the "milk and honey." The milk is twice as good as cows' milk, at one-eighth of the cost, and is absolutely free from tuberculosis.

Those interested might send 15 cents to the B. A. I., of the Dept. of Agriculture, Washington, D. C., asking for Milch-Goat Bulletin No. 68. It is not up to date, but is a valuable treatise.

I have nothing for sale.

REV. ALSON W. STEERS.

Nooksack, Wash., Nov. 19.

SOME ADDITIONAL INFORMATION ABOUT GOATS AND GOATS' MILK.

I note in High-Pressure Gardening for Nov. 15 a reference to goats' milk and goat periodicals. As an interested goat-owner I would refer you to the *Goat World*, published at Baldwin Park, California.

There is, undoubtedly, a growing interest in milk goats, and fairly steady demand. A good medium-grade goat may be bought in this market from \$13.00 to \$25.00. Pure-bred Toggenburg does bring as high as \$300.

Personally I cannot favor the tieing up of so much money in any one animal unless it is for the purpose of breeding pure-bred stock.

Merely for the pleasure of having a pet around I have bought several grade goats when they were dry and sold them after they had their kids.

The last one I bought was a three-quarter Saanen (the Saanen breed, by the way, is the equal of the Toggenburg as a milk-producer, and in my opinion are much more hardy). She had three kids; and when I sold her after selling the kids she was giving over two quarts of milk a day. I have recently bought a goat which the owner says gave four quarts. She appears to show Nubian blood. Certainly if one can obtain a goat which will give four quarts of milk a day a price of \$25.00 is not excessive.

The milk generally sells for 25 cts. a quart, and always has a ready sale. At the Panama Pacific International Exposition Toggenburg goats were exhibited which gave as high as six quarts of milk a day.

Altho it is hard to buy pure-bred stock at reasonable prices, nevertheless it is important that no Angora blood be present, as this seems to militate against a good milk production.

The Department of Agriculture, Washington, publishes several good pamphlets on milk goats, ranging from 5 to 15 cts. apiece.

I keep my goats staked out during the day time, and then bring them into the chicken-yard at night.

Neither the goats nor chickens have been injured by their proximity.

I can imagine no pleasanter or more delightful combination than goats, chickens, bees, and fruit with a few vegetables on the side. There will nearly always be something to do, and plenty of life around the house, especially if you have a few children of your own.

I should like to emphasize the fact that there is positively no odor nor taste to goats' milk, providing the buck is not allowed to be around the barn. The milk is white, rich, and the fat is evenly divided, no cream arising on standing.

SHERMAN KIMBALL.

San Francisco, Cal., Nov. 27.

GOATS' MILK AND GOAT PERIODICALS.

You ask about papers on milk goats. The best is the *Goat World*, Baldwin Park, Cal.; monthly, \$1.00. Los Angeles, Cal., is the great milk-goat center. The milk retails in the city at 25 cents a quart, and it is the life of a baby, sure. A. I. Root will do more good with milk goats than he has with bees, poultry, or "sermons," I predict.

You want to know if goats' will hurt chickens.

I should say not, Mr. Root. In far-off Switzerland doe goats are trained to come when the baby cries, and let the baby nurse direct from the goat. Now, an animal that is so gentle and careful as to walk over a baby, and not injure it, surely would not hurt chickens.

If you pasture a nanny, see that there is a good wire fence around the pasture. The bucks smell bad; but it is claimed that the Anglo-Nubian bucks do not smell at all. If you buy a buck, always keep at least one eye on him, for Mr. Buck is a sort of living battering-ram—something like those they used to employ to batter down the walls of a city.

C. A. NEAL.

Jonesboro, Ind., Nov. 23.

Several copies have been sent me of *The American Standard Milk-Goat Keeper* (Lynn, Mass.), and from them I learn that milk goats cost all the way from \$12 or \$15 up to \$25, or even \$50 for fancy stock.

Mr. A. I. Root:—A subscriber of ours has mailed us a clipping from GLEANINGS IN BEE CULTURE for Nov. 15, containing a letter from Chas. Blake, and your answer under the heading "Goats, Goats' Milk, and Goat Periodicals."

Your question as to whether the goats and chickens would agree was answered by one of our writers in our July number, which we are mailing you. We agree with the article, providing the chickens are absolutely free from lice. Chicken lice will stay on goats and soon kill them if not looked after.

E. F. DWYER,

Editor of Am. S. M. G. Keeper.

Lynn, Mass., Dec. 2.

ALFALFA HONEY INSTEAD OF ALFALFA HAY
AS A CURE FOR THE BLUES.

I presume our readers have seen statements in regard to good wholesome nourishing bread made from alfalfa. So far as I can learn, this bread was made from alfalfa leaves. If I mistake not, the *Rural New Yorker* said recently the whole thing was simply a yarn about making bread from alfalfa hay. As most beekeepers are interested more or less in alfalfa for both hay and honey we give the following:

Mr. A. I. Root:—Knowing that you are interested in new discoveries I enclose a clipping from the *Mobile Register* of July 3, which is self-explanatory.

Referring again to the enclosed clipping, it might be well for you to write Dr. Alexander L. Blackwood, of Chicago, that he should be advocating alfalfa honey instead of alfalfa hay.

L. H. SHRANGER.

Here is the clipping referred to:

SAYS ALFALFA IS CURE FOR BLUES; INDIGESTION AND MENTAL DEPRESSION VANISH BEFORE HAY.

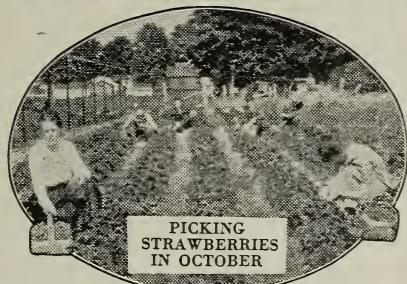
CHICAGO, July 2.—Members of the American Institute of Homeopathy concluded their annual convention here today and adjourned.

Alfalfa as a remedy for indigestion and mental depression was recommended by Dr. Alexander L. Blackwood, of Chicago. He told of experiments made with the new remedy at a Chicago hospital.

"During the past year observations were made of the action of alfalfa on seventeen persons," he said. "All of them noted that they grew so hungry that they could scarcely wait for their meals. Their minds were clear and bright, all bodily functions were stimulated, and it was impossible to have the blues."

"Great Crops of STRAWBERRIES and How To Grow Them"

is the best and most complete book on Strawberry Growing ever written. It fully explains the KELLOGG WAY of growing two big crops each year—a big profit in the Spring and a bigger profit in the Fall. Tells everything about strawberry growing from start to finish. Write for this book and learn how to supply your family with delicious strawberries the year 'round without cost, and how to make \$500 to \$1200 per acre each year. The book is FREE.



Strawberries grown the KELLOGG WAY yield more dollars per square rod and do it in less time than any other crop. The profits made from strawberries are enormous. One acre of strawberries grown the KELLOGG WAY will yield a greater cash profit than twenty acres of common farm crops.

\$1412.50

is the amount Frank Flanigan of Oklahoma made in a single season from one and one-half acres of Kellogg Pedigree Plants grown the KELLOGG WAY. Others are doing fully as well. Our 64-page free book will tell you how to make these big and quick profits. A postal will do—the book is FREE.

FREE BOOK

**R. M. Kellogg Company,
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Try This Wonderful

SUPERLATIVE TOMATO

Best flavored, most productive, large size, beautiful purple color, solid meat, strong grower. The supreme test of seven years' selection. It is being distributed free to our customers this year, and **you can try it at our expense.**

Let Us

Send You

A packet of 100 "Superlative" Tomato seeds. Send only 10 cents for cost of mailing and we'll forward a regular 25c size packet together with a copy of our 130-page illustrated catalog containing hundreds of seed and plant bargains and a **cash coupon** worth 25 cents in part payment of your first order.

IOWA SEED CO., Dept. 36, Des Moines, Iowa



Grow Your Own Fruit

Every farm ought to have a "family orchard" of apples, peaches, pears, a few grapevines, some currants and raspberries.

It costs money to buy fruit in the market, but you can grow it for almost nothing. Ten dollars will buy trees and bushes that will give all the fruit a family of six or eight will need.

Storrs & Harrison Co.'s Fruit Tree Catalogue

lists the good varieties for the family fruit patch and the big commercial orchard. Our stock is grown right in our nurseries, sold direct to you (no agents), delivery guaranteed, 63 years in fruit tree and seed business. Write now for the catalogue.

**The Storrs & Harrison Co.,
Box 407, Painesville, Ohio**



IRON AGE

Farm, Garden and Orchard Tools
Answer the farmer's big questions: How can I grow crops with less expense and labor? How can I grow fancy fruit at low cost? The

IRON AGE Barrel Sprayer

(horizontal) solves the spraying problem for the busy farmer. Can be used in any wagon, cart or sled. Reliable easy-working pump placed outside the barrel—prevents rusting—all parts easy to reach. 100 to 125 pounds pressure with two nozzles. 50 and 100 gallon sizes. We make a full line of sprayers. Write today for our free booklet.

Bateman Mfg Co., Box 20E, Grenloch, N.J.

1917 PLANTING GUIDE AND PURE SEEDBOOK



Ask now! This beautiful 96-page four-color book describes 1917 varieties vegetables and flowers; handsomely illustrated; beautiful round, finger-like vegetable gardens, landscaping, shrubbery, orchards, farms. A dictionary on gardening. Flower lover's delight. A postal gets it.

1st's manual! Most wonderful gardening guide catalog ever published. Better than our famous 1916 book. Don't miss it. Ask today. A postal gets it.

Galloway Bros. & Co., Dept. 765 Waterloo, Ia.



"The Big Desire In Every Man"

Is to own a few acres of land," says Jacob Biggle in his characteristically interesting article in the February issue of The Farm Journal. Some other worth while remarks, too—about the age-old question of "Land for the landless" and our first President who was also a farmer. Read this article! Subscribe to The Farm Journal! The boiled-down, all-cream, chaffless farm paper. Makes life easier for Farm Folks. Goes into nearly 1,000,000 farm and village homes. Appeals to every member of the family. Only \$1 for 5 years. Money back any time. Send for free copy February issue and free copy of 1917 Poor Richard Almanac.

The Farm Journal

117 Washington Square, Philadelphia

IRON AGE

GARDEN TOOLS

Answer the farmer's big questions: How can I have a good garden with least expense? How can the wife have plenty of fresh vegetables for the home table with least labor?

IRON AGE Combined Hill and Drill Seeder

solves the garden labor problem. Takes the place of many tools—stored in small space. Sows, covers, cultivates, weeds, ridges, etc., better than old-time tools. A woman, boy or girl can push it and do a day's hand-work in 60 minutes. 33 combinations, \$3.25 to \$15.00. Write for booklet.

Bateman M'Fg Co., Box 29C, Grenloch, N.J.



GOOD SEEDS

GOOD AS CAN BE GROWN Prices Below All Others

I will give a lot of new sorts free with every order I fill. Buy and test. Return if not O. K.—money refunded.

Big Catalog FREE

Over 700 illustrations of vegetables and flowers. Send yours and your neighbors' addresses.

R. H. SHUMWAY, Rockford, Ill.



A MARYLAND BEE-MAN

Continued from page 104.

sidered it practical to move colonies to a very favorable location temporarily for a certain flow, then elsewhere for another flow and then back home the same season, he answered that he had never tried it, but was accustomed to moving a large number of colonies in changing the location, and sees no difficulty whatever in the moving part of it.

FEELS NEED OF AN AUTO TRUCK.

Mr. James has had a horse since his second year on the new place, but I can see that he will be ready to buy an auto before many seasons have passed, to take him and his supplies back and forth. Such time-saving methods will enable him to extend his operations.

IS PRESIDENT OF THE STATE BEEKEEPERS' ASSOCIATION.

He has been president of the Maryland Beekeepers' Association off and on for a number of years, and was again elected to the position last November. He is a member of the Methodist Church, teaches the men's Bible class, and has superintended the Sunday-school. His farm, located on a high ridge near Hyde's Station, Md., and bordering Long Green Valley, has an elevation of 600 feet above sea-level.

I shall surely visit Mr. James again next swarming time, if possible.

Baltimore, Maryland.

Strawberries

EVERBEARING AND OTHER KINDS

Also Headquarters for Raspberries; Blackberries, Currants, Gooseberries, Grapes, Asparagus, Fruit Trees, Roses, Shrubs, Seed Potatoes, Eggs for Hatching, Crates, Baskets, etc. 34 years experience. Catalog free. Write today, address L. J. Farmer, Box 708, Pulaski, N.Y.

EVERGREENS

38 Hardy Tested Varieties

Best for windbreaks, hedges and lawn planting. Protects buildings, crops, stock, gardens and orchards. Hill's Evergreens are Nursery-grown and hardy everywhere. **From \$1 to \$10 per hundred.**

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Positively the cheapest and strongest light on earth.

Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. \$1.00 to 2000 Candle Power. Fully Guaranteed. Write for catalog.

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Cattle pastured on it will fatten quickly and at small cost. Sown in the orchard between trees, it loosens the soil and promotes rapid growth of trees. Ploughed under it will increase crops wonderfully. Coming into rapid favor and use where once tried.

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Sow a few acres this season. Your land needs it. Great for worn-out farms. Rich in humus and nitrogen producing qualities. Stimulates land for alfalfa perfectly. But it is us. Get our free catalog of Garden and Field Seeds. Address

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WHITE SWEET CLOVER \$3.90 Per Bu.

BIGGEST MONEY-MAKER KNOWN—INVESTIGATE

The greatest forage plant that grows. Superior to all as a fertilizer. Equal to Alfalfa for hay. Excels for pasture. Builds up worn-out soil quickly and produces immense crops, worth from \$50 to \$125 per acre. Easy to start, grows everywhere, on all soils. Write today for our Big 100-page free catalog and circular about unhusked and uncrimped hulled sweet clover. We can save you money on best tested, guaranteed seed. Sample Free.

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Cultivate Horseradish

Increasing Demand . . . Large Profits
100 Root Sets with Full Information, \$1.00

CULTIVATION OF WILD FRUITS

Will interest and surprise you.

FRUIT TREES, SHRUBS, ROSES

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The best, easily made in your own home.

BETTER LIVING REDUCED COST

Send Postal for Information

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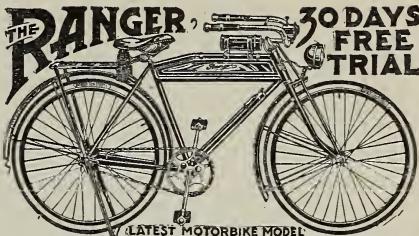
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Write to Mr. A. L. Rice, Manufacturer, 11 North Street, Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars.

Write today.



CHOICE OF 44 STYLES Colors and Sizes in the famous line of "Ranger" Bicycles. There are eighty-three (83) others, also, shown at **factory prices** from **\$14.75, \$15.75, \$17.75**, up. There is a **Mead** Bicycle for every rider, at a price made possible only by our **Factory-Direct-to-Rider** sales plan.

MARVELOUS OFFER — 30 days — one month's free trial on this finest of bicycles—the "Ranger." We will ship it to you on approval, **express prepaid**—without a cent deposit in advance. This offer absolutely **guaranteed**.

WRITE TODAY for our big catalog showing our full line of bicycles for men and women, boys and girls at **prices never before equaled** for like quality. It is a cyclopedia on bicycles, sundries and useful bicycle information. **It's free.**

TIRES, COASTER-BRAKE, rear wheels, inner tubes, lamps, cyclometers, equipment and parts for all bicycles at **half usual prices**. A few good second-hand bicycles taken in trade to be closed out, **\$3 to \$8 each**.

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Ride in a Bush Car. Pay for it out of your commissions on sales, my agents are making money. Shipments are prompt. Bush Cars guaranteed money back.

Five-Pass., 30 H. P. 32x3½ tires
Electric Starting
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KANT-KLOG SPRAYER

9 sizes of sprays from one nozzle. Starts or stops instantly—saves solution and work. **Send for catalog**. Agents wanted.

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Patented
RHODES MFG. CO.,
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THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

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Farm, Garden and Orchard Tools
Answer the farmers' big questions, How can I grow crops with less expense? How can I save in planting potatoes? How make high priced seed go farthest? The

IRON AGE Potato Planter
solves the labor problem and makes the best use of high priced seed. Means \$5 to \$50 extra profit per acre. Every seed piece in its place and only one. Saves 1 to 2 bushels seed per acre. Uniform depth; even spacing. We make a full line of potato machinery. Send for booklet today.

No Misses
No Doubles

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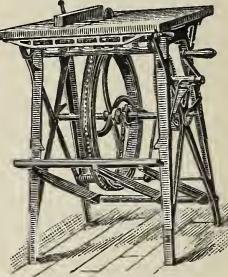
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This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

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My graders' guide and price list are FREE.

Furs held separate on request. Rug and robe making a specialty. No commission or express to pay when you ship to

GEO. E. KRAMER, Valencia, Pa.
Mention "Gleanings"

"Best" Hand Lantern



A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog. **THE BEST LIGHT CO.**
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3 Garden Tools in 1 The BARKER Weeder, Mulcher and Cultivator

The only garden tool that successfully, in one operation, kills weeds, and forms a complete soil mulch to hold moisture. "Best Weed Killer Ever Used." A boy with a Barker beats ten men with hoes. Has shovels for deeper cultivation. Self adjusting. Costs little. Write for illustrated folder and special Factory-to-User offer.

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Prompt service and no trucking bills.

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850,000 GRAPE-VINES

69 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine, cheap. 2 sample vines mailed for 10c. Descriptive catalog free. **LEWIS ROESCH**, Box H, Fredonia, N.Y.



WHAT'S THE REASON?

Continued from page 114.

office, and the sales are made here. The amount of advertising done does not appear in the report.

The crops harvested in Switzerland seem very meager, and I doubt whether we would keep many bees in America if we did not obtain much higher yields. As a business, apiculture would be all out of the question here under such conditions. In Switzerland the individual apiaries consist of not over ten colonies each on an average. The beekeeper does not depend on his bees for his subsistence, keeping them more for pleasure than for profit.

Naples, N. Y., Jan. 2.

Eastern Beekeepers

Write us when in need of bee hives, sections, foundation, or anything in the supply line. Discount on early orders.

If you are planning on keeping more bees, we can furnish you with full colonies, nuclei, or bees by the pound at reasonable prices, as we have 700 colonies in our several yards.

One-pound flint-glass honey-jars, burnished top, \$5.00 a gross. Catalog mailed upon request.

A bargain: 3000 sections 3 1/2 x 5 x 1 1/2 slightly soiled at \$2.50 per 1000.

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Apiary: Glen Cove, L. I.

QUEENS AND BEES

Southern bred under natural conditions. Three-banded Italians. We are breeding from the best selected from eleven yards. Bees gathering pollen Jan. 1st. Prices March to June: 1 6 12 50
Untested . . . \$1.00 \$ 5.50 \$10.00 \$ 38.00
Tested . . . 1.25 6.50 12.00 45.00
Select tested . . . 2.00 10.00 18.00 65.00
1 lb. Bees . . . 1.50 8.50 16.00 65.00
2 lb. Bees . . . 2.50 15.00 29.50 115.00
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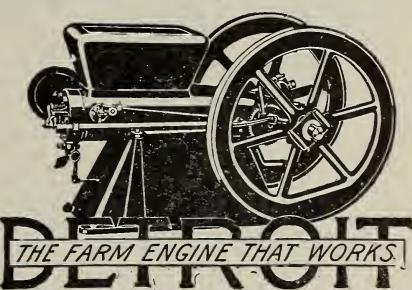
Orders booked now. Shipments begin in March. Ten per cent discount on all orders received 30 days before shipment is to be made. Safe arrival guaranteed on bees 6 days of Calallen. Let us know your wants. Reference The Guaranty State Bank, Robstown, Texas.

Nueces Valley Apiaries, Calallen, Texas

64 BREEDS Valuable New Poultry Book Free—108 pages. Fine pure-bred chickens, ducks, geese and turkeys. Choice, hardy, Northern raised. Fowls, eggs and incubators at low prices. America's greatest poultry farm. 24th year in business. Write today for Free Book.

R. F. NEUBERT CO., Box 837, Mankato, Minn.

Gasoline and Kerosene



Built and guaranteed by the largest producers of farm engines—simple, durable, powerful—four cycle, suction feed, make and break ignition—every part interchangeable—fully tested. Guaranteed to Develop Rated H. P.

SAVES FUEL, TIME, LABOR, MONEY

Lowest Price, Greatest Value

Write for big illustrated Engine Book today

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Wadsworth Mfg. Co., Successors

Lice-Proof Nests

WRITE QUICK for Catalog and **SPECIAL OFFER**

Nests won't cost you **1c**
Your hens will pay for them in More Eggs



Over 25000 in use.

Don't Wait. Make Big Money on Poultry. Write Knudson Mfg. Co., Box 152, St. Joseph, Mo.

Chicken Money

1917 is going to be the biggest year known for poultry raisers. Start right—Get the Cyphers Book. A mine of information which shows the way. Write for free copy.

Cyphers Incubator Co., Dept. 69 Buffalo, N. Y.



Poultry Book Latest and best yet; 144 pages, 215 beautiful pictures, hatching, rearing, feeding and disease information. Describes busy Poultry Farm handling 53 pure-bred varieties. Tells how to choose fowls, eggs, incubators, sprouters. This book worth dollars mailed for 10 cents. Berry's Poultry Farm, Box 97, Clarinda, Iowa

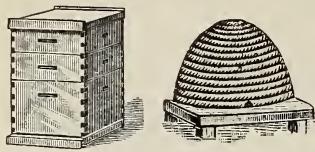
62 BREEDS, Pure-bred Chickens, Ducks, Geese, Turkeys. Hardy, northern raised, vigorous, beautiful. Fowls, eggs, incubators, at low prices. America's Pioneer Poultry Farm; 23 years' experience. Large fine Annual Poultry Book and Catalog FREE.

F. A. NEUBERT, Box 693, Mankato, Minn.

100 Everbearing Strawberries Plants \$1.40 Post Paid

Progressive, American or Superb. We introduced progressive. Catalog Free all about the New Everbearers and other important varieties.

C. N. FLANSBURGH & SON, Jackson, Mich.



Forehand's QUEENS

Which Colony is Yours, Mr. Beekeeper?

How many of you were disappointed last season when you harvested your honey crop? You can make every colony a good one. WHY NOT? Just head it with a young vigorous three-band Italian queen. She will cost you only 75c, just 3 lbs. of honey. YOU can easily make a gain of 6 lbs. over the inferior colony which is a net gain of \$3.75. Good pay for introducing one queen, not considering the increased value of the colony.

Spring will soon be here, the time to request that colony with the bad queen. CAN you spend your time more profitably now than deciding what stock, and where to purchase your early queens? Give us a trial. We breed only the pure three-band queens. All of our yards are the purest that can be had. So you take no risk in getting a hybrid from us.

Four reasons why you should use our queens: 1st—They are first-class honey-gatherers. 2d—They are the most vigorous, and highly resistant to foul brood. 3d—The Imported bees (which ours were reared from) are the gentlest bees known. 4th—The most modern and learned beemen in the world today (the Roots) use the three-bands. WHY? Because they are best.

We have had 25 years of experience, in rearing queens, having started with Doolittle, and such men. We have 1000 nuclei, which makes it possible for us to fill orders promptly. Three expert queen-breeders have charge of nuclei. So we do not overwork, which gives us ample time to improve our stock. None but first-class queens are mailed. We give a first-quality queen at a medium price, and guarantee perfect satisfaction and safe delivery.

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|-------------------------|-------------|--------------|-----------------|
| Untested | One, \$.75 | Six, \$ 4.25 | Twelve, \$ 8.00 |
| Selected untested | One, 1.00 | Six, 4.75 | Twelve, 9.00 |
| Tested | One, 1.50 | Six, 8.75 | Twelve, 17.00 |
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Write for circular giving general description. Mail all orders to

W. J. FOREHAND & SONS, Fort Deposit, Alabama

For Sale---10,000 lbs. of Bees in Packages---Spring Delivery

20 YEARS OF SELECT BREEDING GIVES US BEES OF THE HIGHEST QUALITY BEES FOR HONEY PRODUCTION.....BEES OF UNUSUAL VITALITY

As we are large honey producers as well as queen breeders, producing from one to two cars of honey annually, we have ample opportunity to test out all breeding stock used in our queen yards. Thus we are able to guarantee our bees to give absolute satisfaction. If you want bees that are gentle, great honey getters as well as Very Resistant to European Foul Brood, let us book your order. Safe arrival guaranteed.

Swarms of Bees Without Queens April First Delivery

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|------------------------------|----------------------------|-------------------------------|
| 1-lb. packages, \$1.25 each; | 25 to 50, \$1.22 1/2 each; | 50 to 100 and up, \$1.20 each |
| 2-lb. packages, 2.25 each; | 25 to 50, 2.22 1/2 each; | 50 to 100 and up, 2.20 each |
| 3-lb. packages, 3.25 each; | 25 to 50, 3.22 1/2 each; | 50 to 100 and up, 3.20 each |

Golden and 3-Band Italian Queens April First Delivery

| | |
|---|--|
| Untested75 cts. each, \$65.00 per 100 | Tested\$1.25 each, \$110 per 100 |
| Select Untested 90 cts. each, 75.00 per 100 | Select Tested 1.50 each, 125 per 100 |

Queens' wings clipped free of charge.

Write for descriptive price list. Let us book your order now.

Only a small deposit down required.

LARGEST AND MOST SUCCESSFUL SHIPPERS OF BEES IN PACKAGES

M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

Five finest roses \$1
Delivered to your home...
Sturdy bushes of finest varieties
guaranteed to grow.
Get our Free Fruit & Floral Guide
illustrating these roses in color;
containing unusual helpful collections
of fruit, flowers, shrubs and
evergreens for your garden.

ARTHUR J. COLLINS & SON
Box 42 Moorestown, N. J.




FREE A pair of Ma. ed Everbearing Strawberries, large pkt. of new Cereal Felterita, Sudan Grass and other seeds, free. Send 10c for Testing. Send 10c for mailing expense, or not, as you please. We offer genuine Progressive Everbearing plants at 50c per doz.; 90c for 50; \$1.75 for 100; \$5.00 for 325, all postpaid. CATALOG FREE. The Gardner Nursery Co., Box 454, Osage, Iowa

ARCHDEKIN'S Fine Italian QUEENS and Combless Bees

April, May, June, queens, warranted purely mated \$1.00 each, 6 for \$5.00, doz., \$9.00. Bees per lb. \$1.25. With untested queen, \$2.00 per lb. I have originated a package light, but strong. Saves you bees and express. My guarantee is prompt shipment, safe arrival, perfect satisfaction. No disease.

Small deposit books your order.

J. F. Archdekin, Bordlonville, Louisiana

STRAWBERRY (OF ALL KINDS) PLANTS

Fine stock of the wonderful Everbearing plants at right prices. Small fruit plants for farm and garden. Write for catalog. Return this ad. and several fruit-growers names for one-half dozen Everbearing plants free.

BRIDGMAN NURSERY CO., BOX 44, BRIDGMAN, MICH.

TALKING QUEENS

Laws Queens Speak for Themselves

Please remember Laws' queens have stood the test of continuous advertising in this journal for this the 28th season. Thousands of customers have testified to the merits of Laws' bees and queens, and if there is a displeased customer I do not know it. I will begin mailing queens as usual in March. Single tested queen, \$1.25. Select Tested, \$2.00. Untested will be ready in April; after which see the following table.

| | April to June | | | June to November | | |
|---|---------------|---------|----------|------------------|---------|----------|
| | 1 | 12 | 100 | 1 | 12 | 100 |
| Untested | \$1.00 | \$ 9.00 | \$ 75.00 | \$.75 | \$ 8.00 | \$ 65.00 |
| Tested | 1.25 | 10.00 | 85.00 | 1.00 | 10.00 | 75.00 |
| Select Tested | 2.00 | 18.00 | 120.00 | 1.50 | 15.00 | 100.00 |
| Breeding queens: Guaranteed none better, at all times: each \$5.00. | | | | | | |

Combless Bees AFTER May 1st.

| |
|---|
| 1 lb. package, \$1.50; 5 to 10 packages each, \$1.25; 10 to 50 packages, \$1.15 |
| 2 lb. package, 2.50; 5 to 10 packages each, 2.25; 10 to 50 packages, 2.15 |
| 3 lb. package, 3.50; 5 to 10 packages each, 3.25; 10 to 50 packages, 3.15 |

Price of queens to be added to above packages.

When 10 or more packages are bought, empty carriers to be returned at my expense.

My queens are all reared in full colonies, plenty of young bees and abundance of fresh honey in the hives. No other plan is so conducive to full-developed and long-lived queens.

My facilities are such that I can mail from 5000 to 6000 queens each season. Circular on application.

Five per cent discount on all orders with the cash for either bees or queens booked this month.

Purity of stock and safe delivery guaranteed to your express or post office on all bees and queens from my yards.

Address W. H. Laws, Beeville, Bee County, Texas

Bee-line Queens---Italians Golden and 3-banded

Orders Booked Now. All orders that have cash accompanying them I will allow 5 per cent discount. This is good till April 15. Prices as follows:

Untested queen, one for \$1.00; six, \$5.50; twelve, \$10.00

Tested queen, one for 1.25; six, 6.50; twelve, 12.00

We are wintering about 150 fine fall-reared queens, and they are tested: so if you are in need of a queen early we can supply you. We guarantee our queens to give satisfaction, or replace them, or refund the money you paid us for them. Our three-banded Italians walked away again with first honors at the Texas State Fair last fall. Orders booked now, and queens shipped when wanted.

B. M. Caraway, Bee-line Apiaries, Mathis, Texas

Beekeepers' Supplies

Send for new 1917 price list now ready. We are also in the market at all times for extracted and comb honey in any quantity. Give us a chance to bid on your supplies. We can save you money.

The M. C. Silsbee Co., Haskinville, N. Y.
P. O. Cohocton, N. Y. Rt. 3.

FRUIT GROWING and BEEKEEPING

are two closely allied occupations. Beekeepers should read "THE SOUTHERN FRUIT GROWER" which treats on all the phases of successful fruit growing, also gardening, etc. Established for more than 20 years. Edited by Robert Sparks Walker. 50c per year; 3 years for \$1, or sample copy sent free to those who are interested. Address

THE SOUTHERN FRUIT GROWER
Chattanooga, Tenn.

The American Bee Journal

C. P. Dadant, Editor

Dr. C. C. Miller, Associate Editor

Frank C. Pellett, Staff Correspondent

Brimful of interesting reading matter. Articles on Marketing Honey, on Swarm Prevention, Queen Rearing, Honey Production; in fact on everything pertaining to the advancement of beekeeping. Our Staff Correspondent and our Editor travel thousands of miles to visit beekeepers and report items of interest to our readers.

A few pounds of honey gained, a swarm saved here and there; it doesn't take much to make up the price of a subscription, and we believe it can be the means of saving much more than its cost to you.

Try it for a year. We believe you'll keep on as a regular subscriber. We can start you with the January issue if you write at once.

PUBLISHED MONTHLY, \$1.00 A YEAR

American Bee Journal, Hamilton, Illinois

We are Now Booking Orders
for Bees in 2-lb. Packages
with or without queens.
for delivery after May 1

Have an order from Mr. R. F. Holtermann for 50 two-pound packages with queens.

Under date of 9/29/1916, Mr. L. C. Keet of Black River, N. Y., writes, "Your two-pound packages did fine. Two of mine made 90 pounds surplus, and the rest averaged about 50 lbs. with honey left to winter on. Mr. G. B. Howe averaged nearly 100 pounds per colony from his, but there is not any left in the hives." We make the following terms: Booking received only with a 10 per cent deposit, no booking received on this offer after April 1st. Prices F. O. B. Moore, Tex.

With Queens: 2-pound packages, \$3.00 each; in lots of 10 to 25 packages, \$2.90 per package.

Without Queens: 2-pound packages, \$2.35 each; in lots of 10 to 25 packages, \$2.25 per package.

Safe Arrival Guaranteed.

This ad will not appear again.

O. E. Milam, Moore, Texas
Reference, Moore National Bank



**Italian Queens for
1917 --- 3-banded**

Will be ready by April 1 to begin mailing untested queens of my exceptionally vigorous strain of Italian bees. They are gentle, prolific, and the best of honey-gatherers. Give them a trial.

Untested, \$1.00; 6, \$5.00; 12, \$9.00.

Tested, \$1.25; 6, \$6.50; 12, \$12.50.

Will book orders now. Send for my free circular and price list, and see the natural conditions under which my queens are raised. Safe arrival and satisfaction guaranteed.

JOHN G. MILLER
723 C St., Corpus Christi, Texas

Increase Your Honey Crop

by introducing some of Leininger's strain of Italian Queens which have a record of 30 years as to honey-gathering qualities and gentleness are unequalled. Disease has never appeared in our apiaries. Queens will be ready June the first. Untested, each, \$1; 6, \$5. Tested, each, \$1.25; 6, \$5.50. Breeders, \$5.

FRED LEININGER & SON, Delphos, Ohio

Classified Advertisements

Notices will be inserted in these classified columns for 25 cts. per line. Advertisements intended for the department cannot be less than two lines, and you must say you want your advertisement in the classified columns or we will not be responsible for errors.

HONEY AND WAX FOR SALE

Beeswax bought and sold.
D. Steengrafe, 81 New St., New York.

Beeswax bought and sold. Strohmeyer & Arpe Co., 139 Franklin St., New York.

FOR SALE.—No. 1 and fancy white-clover comb honey, 15 cts.; No. 2, 12½ cts.
Nelson Dewey, Adrian, Mich.

FOR SALE.—White clover and buckwheat extracted honey. Price on application.
I. J. Stringham, 105 Park Place, New York.

FOR SALE.—Pure honey and beeswax—Porto Rico, Cuban, etc.
D. Steengrafe, 81 New St., New York.

FOR SALE.—Choice table honey, thoroly liquefied, in new 60-lb. cans, at 12½ cts.; dark amber, 10. Van Wyngarden Bros., Hebron, Indiana.

FOR SALE.—3000 lbs. white-clover honey in 6-oz., pint, quart, and five-gallon cans. Write for price list.
W. O. Hershey, Landisville, Pa.

FOR SALE.—No. 1 white comb, \$3.50 per case; No. 2, \$3.00; No. 1, fall comb, \$3.00; No. 2, \$2.50; 24 sections to case. In six-case lots 10 per cent discount.
H. G. Quirin, Bellevue, O.

HONEY AND WAX WANTED

WANTED.—Beeswax.
Van Wyngarden Bros., Hebron, Indiana.

WANTED.—Extracted honey at jobbing prices. National Honey-Producers' Asso., Kansas City, Mo.

WANTED.—Clover and amber extracted honey. Highest cash or trade price.
Deroy Taylor Co., Newark, N. Y.

BEESWAX WANTED.—For manufacture into Weed Process Foundation on shares.
Superior Honey Co., Ogden, Utah.

WANTED.—Extracted clover honey in any quantity; send sample and lowest cash price.
E. B. Rosa, Monroe, Wis.

WANTED.—Extracted clover and light-amber honey in any quantity. Send sample and lowest price.
C. O. Bergstrand, Balsam Lake, Wis.

WANTED.—White-clover and light-amber extracted honey. Will buy in lots of 1000 lbs. to a carload. Send sample and lowest price.
M. E. Eggers, Eau Claire, Wis.

WANTED.—Extracted honey in both light and amber grades. Kindly send sample, tell how honey is put up, and quote lowest cash price delivered in Preston.
M. V. Facey, Preston, Minn.

FOR SALE

Get our new Rubber Stamp and Label Catalog.
Acme Printing Co., Medina, Ohio.

HONEY LABELS.—Most attractive designs. Catalog free.
Eastern Label Co., Clintonville, Ct.

SEND TODAY for sample of latest Honey Labels. Liberty Pub. Co., Sta. D, box 4-E, Cleveland Ohio.

FOR SALE.—A full line of Root's goods at Root's prices.
A. L. Healy, Mayaguez, Porto Rico.

FOR SALE.—Circular-saw mandrels, and emery-wheel stands.
Charles A. Henerý, Eden, N. Y.

Comb foundation cheap, factory to beekeeper direct.
J. J. Angus, Grand Haven, Mich.

FOR SALE.—300 tin supers in good condition.
J. A. Everett, Edgewater, Colo.

Beekeepers, let us send you our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap.
White Mfg. Co., Greenville, Tex.

How to double your honey production at a small cost. Send 2-ct. stamp for information.
W. M. Budlong, 1526 14th Ave., Rockford, Ill.

FOR SALE.—2000 A1 standard L. frames, wired and built on full sheets of foundation, and absolutely free of all disease. Jas. H. McCue, Alabaster, Mich.

We carry a complete line of bee-supplies. Ask for our bee-supply catalog. Let us quote you on your requirements.
Deroy Taylor Co., Newark, N. Y.

Good second-hand 60-lb. cans, 2 cans to the case, 30 cts. per case, in lots of 10 cases or less. In lots of 25 cases or more, 25 cts. per case. These prices are f. o. b. Cincinnati. C. H. W. Weber & Co., 2146-2148 Central Ave., Cincinnati, O.

THE ROOT CANADIAN HOUSE.—54-56 Wolseley St., Toronto, Ont. (note new address). Full line of Root's famous goods; also made-in-Canada goods. Extractors and engines; GLEANINGS and all kinds of bee literature. Get the best. Catalog free.

FOR SALE.—Fifty new ten-frame hives with metal covers complete, with frames nailed and wired at \$1.75 each, in lots of 25 or more at \$1.50 each; also 50 ten-frame supers nailed and wired, hives and supers painted two coats, at 60 cts. each, for the supers; in lots of 25 or more 50 cts. each.
M. C. Silsbee Co., P. O. Cohocton, Rt. 3. Haskinsville, N. Y.

FOR SALE.—Well-established retail honey business in one of the largest industrial centers of the world. Reason for selling is that my apiaries are too far away to work to advantage, so I wish to move near the bees and devote all my time to them. A rare opportunity for a live man with a little capital. Established 1910. John C. Bull, 811 So. Hohman St., Hammond, Indiana. Phone 1023 J.

PATENTS

Patents secured or all fees returned. We help sell patents. Patents advertised free. Send data for actual free search. Books free. Credit Given. E. E. Vrooman & Co., 834 F St., Washington, D. C.

GOATS

MILCH GOATS.—"Profit and Pleasure in Goat-Keeping," pronounced by experts the best goat book, regardless of price; profusely illustrated; by mail, 35 cents. Fred C. Lounsbury, Plainfield, N. J.

POULTRY

S. C. Brown Leghorns; stock, eggs, baby chicks. Circular.
H. M. Moyer, Boyertown, Pa.

S. C. R. I. Reds, direct descendants of my winners at Omaha, Sioux City, and Lincoln. Only selected stock for sale. Otto Timm, Rt. 1, Bennington, Neb.

White and Buff Wyandotte and Dark Cornish eggs for hatching, from heavy-laying as well as prize-winning stock. Be sure to get my catalog before you buy. "It's free." Get the winners and payers. I am booking orders now.

Joseph G. Cox, Valencia, Pa.

Beekeepers should be keepers of chickens also. Try my winter-laying, prize-winning, 200-egg strain of White Wyandottes. Eggs, chix, and breeding stock for sale. Tell me how many you want, and when, then I will quote prices to please you.

Dr. Elton Blanchard, Youngstown, Ohio.

POULTRY PAPER, 44-124 page periodical, up to date, tells all you want to know about care and management of poultry, for pleasure or profit; four months for 10 cents. Poultry Advocate, Dept. 56, Syracuse, N. Y.

WANTS AND EXCHANGES

Wax and old combs wanted for cash or to make up on shares, beekeeper to factory direct.

J. J. Angus, Grand Haven, Mich.

WANTED.—Man to wear fine suit, act as agent. Big pay, easy work.

Banner Tailoring Co., Dept. 502, Chicago.

WANTED.—To work an apiary in a good location on shares, with preference of buying. Must be free from disease.

Harvey F. York, Avant, Okla.

What have you in exchange for a good "Boswell" stereopticon outfit, complete with slides, Bausch & Lomb lens?

Van Wyngarden Bros., Hebron, Indiana.

WANTED.—Bees in lots of 25 to 250 colonies within 300 miles of Detroit. Correspondence with full particulars solicited.

A. W. Smith, Birmingham, Mich.

WANTED.—Every beekeeper to plant hardy northern nut-trees, budded and grafted; pecans, English walnuts, and chestnut; immense profits. Catalog free.

R. L. McCoy, Lake, Ind.

WANTED.—Queen-breeders to take up proposition to supply our members with queens. Location and equipment furnished. About 3000 queens used in 1916. Idaho-Oregon Honey-producers' Association, New Plymouth, Idaho.

WANTED.—To furnish every beekeeper within 500 miles of Boise, Idaho, with the best and cheapest bee supplies on the market, *quality considered*. Send me your order or a list of your requirements for 1917. Our catalog and price list will be mailed to you free. Order early and get the discounts.

C. E. Shriver, Boise, Idaho.

REAL ESTATE

FOR SALE.—My home in Redlands, Cal. Will include bees if desired.

P. C. Chadwick, Redlands, Cal.

VIRGINIA, N. C., W. Va., & Ohio Farms at \$15.00 per acre and up offer big value for the price. Best climate, markets, schools, and transportation. Good land and neighbors. Write F. H. LaBaume, Agr. Agt. N. & W. Ry., 246 Arcade, Roanoke, Va.

FOR SALE.—A 60-acre farm $\frac{1}{2}$ mile from city limits; 3 acres timber; 1000 peach-trees, 2 and 3 years old; good buildings; large shade-tree; ideal location for fruit, poultry, and bees. Price \$65 per acre; \$1000 down. Address

H. Feldman, Rt. 4, Dowagiac, Mich.

A small farm in California will make you more money with less work. You will live longer and better. Delightful climate. Rich soil. Hospitable neighbors. Good roads, schools, and churches. Write for our San Joaquin Valley illustrated folders free.

C. L. Seagraves, Industrial Commissioner A. T. & S. F. Ry., 1934 Ry Exchange, Chicago.

FOR SALE.—Twenty-acre ranch; improvements; 4-room house; barn; 9 acres in alfalfa; will include bees and live stock if desired, at railroad station. Jacob Probst, East Nicolaus, Cal.

BARGAIN.—If taken before March 1, house, lot, and 90 colonies of bees at Schurz, Nevada, \$600; close to school, church, stores, and depot. Splendid location, fine honey. H. F. Hagen, Reno, Nevada.

FOR SALE.—Ten-acre farm in Maricopa Co., Arizona, 4 miles east of Phoenix, and one lot in corporation of Phoenix. Orchard of 600 fruit-trees; house, good well; house for extracting honey, Cowan reversible extractor; one-burner gasoline-stove, capping-melter, wheelbarrow, hives. For further particulars address John S. Miller, Rt. 9, Archbold, O.

BEES AND QUEENS

Finest Italian queens. Send for booklet and price list. Jay Smith, 1159 De Wolf St., Vincennes, Ind.

Well-bred bees and queens. Hives and supplies. J. H. M. Cook, 84 Cortlandt St., New York.

FOR SALE.—20 colonies of bees near Ft. Pierce, Fla. P. W. Sowinski, Bellaire, Mich.

FOR SALE.—6 colonies of bees and complete equipment for same, including extractor, etc. Mrs. J. B. Dochter, Christiana, Pa.

Nutmeg Italian queens and Root's beekeepers' supplies, Root's prices.

A. W. Yates, 3 Chapman St., Hartford, Conn.

Fine Italian queens and bees. Send for our 1917 calendar, free.

A. E. Crandall & Son, Berlin, Conn.

My choice northern-bred Italian queens are hardy, and will please you. Orders booked now for spring delivery. Free circular. F. L. Barber, Lowville, N. Y.

BUSINESS FIRST QUEENS.—Tested queens ready now. Send for price list containing my \$10 free offer.

M. F. Perry, Bradenton, Fla.

Try ALEXANDER'S Italian queens for results. Untested, each, 75 cts.; 6 for \$4.25; \$8 per dozen. C. F. Alexander, Campbell, Cal.

FOR SALE.—Fifty colonies, 8 frames, modern hives, in good condition. Write for prices.

Walker Barr, Rt. 2, Holt, Mo.

FOR SALE.—Golden Italian queens that produce golden bees; for gentleness and honey-gathering they are equal to any. Every queen guaranteed. Price \$1; 6 for \$5.

Wm. S. Barnett, Barnefts, Va.

FOR SALE.—80 colonies of fine bees at Tularosa, N. M.; good location; good place to live, because owner deceased. Address N. B. Dewitt, care of E. P. & S. W. Ry., Douglas, Ariz.

FOR SALE.—253 colonies of bees at Columbus, Miss., at \$1200—a big bargain. Best location in U. S. for honey, bees, or queens; or will let on shares. N. Gute, 2363 Fulton St., Toledo, O.

FOR SALE.—25 colonies of Italian bees, frames wired, combs built on full sheets of foundation; 8-fr. colonies, \$6; 10-fr., \$7 with queen.

Henry Shaffer, 2860 Harrison Ave., Cincinnati, O.

Swarms in packages, also Italian queens, can be had—the kind that will increase your smiles and your bank account from W. D. Achord, of Fitzpatrick, Ala. See his large ad't elsewhere in this magazine. Circular to you for the asking.

Golden Italian queens of the quality you need. Bred strictly to produce Golden bees that are real workers. Delivery after March 25. Untested, 1, 75 cts.; dozen, \$8.25; 50, \$32.50; 100, \$60.00. Bees by the pound, nucleus, or full colony. Money back if not satisfied.

L. J. Pfeiffer, Motor Route A, Los Gatos, Cal.

Southwest Virginia five-band Italian queens, the fancy comb-honey strain, gentle to handle. They will please you. Try one. \$1.00 each.

Henry S. Bohon, Rt. 3, box 212, Roanoke, Va.

FOR SALE.—Ten colonies Italian bees in Buckeye double-walled hives, all in first-class condition. New queens introduced last fall; \$10.00 per colony. Keewaydin Farms, Gates Mill, Ohio.

Golden and 3-band Italians; also Carniolan queens; tested, \$1.00 each; untested, 75¢; for larger lots and bees in packages and nuclei write for prices. C. B. Bankston, Box 65, Buffalo, Texas.

My 3-banded Italian queens will be ready to ship April 1. Write for prices of bees and queens by the pound. Safe arrival and satisfaction guaranteed.

J. A. Jones, Greenville, Ala.

FOR SALE.—Italian bees and queens. One-pound, two-pound, and three-pound packages, with queens; also on frames and full colonies. Ask for our prices and beginners' catalog.

Deroy Taylor Co., Newark, N. Y.

My bright Italian queens will be ready to ship April 1 at 75 cts. each; virgin queens, 30 cts. each. Send for price list of queens, bees by the pound; safe arrival and satisfaction guaranteed.

W. W. Talley, Rt. 4, Greenville, Ala.

Two-frame nuclei, 3-band Italian bees, \$2.25; 1 lb. bees with queen, \$1.65. Hoffman brood-frames, wired, and foundation, at catalog prices less carriage, if ordered for parcel post. J. B. Marshall & Son, Rosedale Apiaries, Big Bend, La.

FOR SALE.—1000 lbs. bees in 2-lb. packages at \$1.00 per lb. Untested Italian queens, 70 cts. extra, to be shipped in April. All orders must be in by April 1.

T. W. Burleson, Waxahachie, Texas.

My bright Italian queens will be ready to ship April 1, at 60 cts. each; virgin queens, 30 cts. Send for price list of queens, bees by the pound and nucleus. Safe arrival and satisfaction guaranteed.

M. Bates, Rt. 4, Greenville, Ala.

Golden Italian queens that produce golden bees; the highest kind, gentle, and as good honey-gatherers as can be found; each, \$1.00; 6, \$5.00; tested, \$2.00; breeders, \$5.00 to \$1.00.

J. B. Brockwell, Barnetts, Va.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, \$1.00; 6, \$5.00; tested, \$3.00; breeders, \$5.00 and \$10.00. C. W. Phelps & Sons, Wilcox St., Binghamton, N. Y.

Golden Italian queens, bred strictly for business, that produce a strong race of honey-gatherers, untested queens 75 cts. each; \$8.00 per dozen; \$60.00 per 100; tested, \$1.50 each. Prompt service and satisfaction guaranteed.

L. J. Dunn, 59 Broadway Ave., San Jose, Calif.

QUEENS.—Improved three-banded Italians, bred for business, June 1 to Nov. 15, untested queens, 75 cts. each; dozen, \$8.00; select, \$1.00; dozen, \$10.00; tested queens, \$1.25 each; dozen, \$12.00. Safe arrival and satisfaction guaranteed.

H. C. Clemons, Rt. 3, Williamstown, Ky.

FOR SALE.—Three-banded Italian bees and queens. 1 untested queen, \$1.00; tested, \$1.50; 3-frame nucleus with untested queen, \$4.00. My queens are reared from the best breeders and by the best known methods. No diseases. Satisfaction guaranteed. Ask for prices on larger quantities.

J. L. Leath, Corinth, Miss.

QUEENS, Doolittle and Moore strain, also Goldens that are Golden, 1 select un., \$1.00; 6, \$4.25; 12, \$8.00; tested, \$1.25. Best breeder, \$5.00.

Bees by the pound a specialty. One 1-lb. package \$1.25; one 2-lb., \$2.25; large lots less; also nuclei and colonies. Ready March 15. Booking orders now. Circular free.

J. E. Wing, 155 Schiele Ave., San Jose, Cal.

FOR SALE.—35 colonies bees, eight and ten frame, supers, half metal tops, straight combs, wired frames, no disease, \$5.00 per takes the lot.

S. H. Burton, Washington, Indiana.

TENNESSEE-BRED QUEENS.—My three-band strain that has given such universal satisfaction for over 40 years. Orders filled promptly or money returned by first mail. 1000 nuclei in use. Tested in June, \$1.75; untested, \$1.00; in July, \$1.50 and 75 cts. Postal brings circular.

John M. Davis, Spring Hill, Tenn.

FOR SALE.—Three-band Italian bees and queens. Three-frame nuclei with this year's rearing queen, \$3.00; without queen, \$2.75. Three pounds bees, \$3.25. Young queens, 75¢ each. Our bees and queens last year gave general satisfaction and this year we are in position to give stronger nuclei with a greater per cent brood than we did last year. If it is a bargain you are looking for, send your order this way. Send your orders now and money when you want them shipped. Can begin shipping April 15th. Bees are all in standard hives, Hoffman frames, wired and full sheets foundation. We guarantee bees to be free from disease. The following is an extract from one of our many satisfied customers. "Aug. 16th, today, I hived the second large swarm from the colony I started from a three-frame nucleus I bought from you in June and have about 40 lbs. surplus honey on hive. It pays to keep well-bred stock whether it is cattle or bees." (Name furnished on application.)

The Hyde Bee Co., Floresville, Texas.

MISCELLANEOUS

Quality Dahlias (northern grown). Send for catalog. Mrs. E. L. G. Davis, Rt. 2, Newton, N. H.

Vulcanizing tires and tubes pays large profits in any town. I have a Haywood casing and tube vulcanizer that cost \$500, and is almost new. It will vulcanize or retread any size tire. It is all complete with boiler, stock, and tools; \$250 takes it—half cash; time on balance. Send for photo and description.

L. F. Howden, Fillmore, N. Y.

HELP WANTED

WANTED.—Man to work six-acre place in village, and help with bees.

D. L. Woodward, Clarksville, N. Y.

WANTED.—Two men to work with bees the coming season; must have some experience.

B. B. Coggshall, Groton, N. Y.

WANTED.—Position with beekeeper by young man of good character with 8 years' experience.

K. C. Smith, Salesville, Ohio.

WANTED.—Experienced beeman familiar with Rocky Mountain conditions to handle bees on shares. Can offer good proposition. Write with details of experience, etc. A. H. Dunn, Fort Collins, Colo.

WANTED.—A man by March 1, with some experience, to assist in running 800 colonies and learn comb-honey production. Live in town. State wages desired, and description of self in first letter.

G. C. Mathews, Hansen, Idaho.

WANTED.—To correspond with a first-class queen-breeders who would like to come to Arizona and help build up a good queen-breeding and bees-by-the-pound business on shares. Bees usually begin gathering pollen in February. Good references required.

Dan Rorabaugh, Duncan, Ariz.

WANTED.—Young man with a little experience, fast willing worker, as student helper with our 1000 colonies. Crop for past two years, 6 carloads. Will give results of our long experience and small wages; every chance to learn. Give age, height, weight, experience, and wages, all in first letter, or expect no answer.

E. F. Atwater, Meridian, Idaho.

WANTED.—From April 1 until Sept. 15, 1917, a man who has had some experience with bees to help work in apiary. State wages, with board furnished, in first letter. Frank C. Alexander, Schoharie, N. Y.

Two young men can, during the season of 1917, reap the benefit of my experience for nearly forty years with up to 800 colonies of bees; also as public demonstrator with bees and lecturer and experience in beekeeping at the Ontario Agricultural College. One with clean body and mind required. Board; and, if the season is good, a little more given.

R. F. Holtermann, Brantford, Ontario, Canada.

TRADE NOTES

We would again notify the readers of GLEANINGS that we begin on March 1 the better subscription policy of discontinuing all subscriptions on expiration—excepting those who specifically write us asking that their subscription be continued after expiration, and telling us on or about what date they expect to remit. This is not only the better subscription policy, but it is the one that a majority of our readers have come to prefer. Well, then, after March 1 we shall run nobody into debt for this journal—except by his own express order—and expired subscriptions will be discontinued. We believe that every reader of GLEANINGS will agree that this is the better business way, the just way, and the honest way to treat subscribers.

SECOND-HAND CANS ADVANCED.

Since the great increase in the price of new cans for honey we are receiving more inquiries for our choice second-hand cans than we are able to furnish. To be more in line with the present price of new cans we quote, till further notice, on second-hand cans of sixty pounds capacity, two in a case, at \$5.00 for 10 boxes; \$11.00 for 25 boxes, or \$40.00

per 100 boxes. We already have contracts for all that we may accumulate for some weeks, and will accept orders only at these prices, subject to supply available.

BEESWAX ADVANCED.

Largely due to a heavy export demand for beeswax the market has advanced in recent weeks so that we are warranted in offering 31 cents cash, 33 in trade, for average wax delivered at Medina; two cents less delivered at our California branches, or one cent less at other branches.

For choice yellow, we pay one to two cents extra. This is as high a price as we were paying before the great war broke out two and a half years ago, after which the price dropped about ten cents a pound. It has been slowly coming back to the former level.

If prices should advance any further it will be necessary to make an advance in the price of comb foundation, for we cannot work on any less margin between prices named above and present prices of comb foundation.

If you want your wax worked into foundation we are prepared to work it at very reasonable rates, which we will quote on application. The quantity should be at least 25 pounds and upward.

The A. I. Root Co., Medina, O.

Convention Notices

The annual convention of the Southeastern Minnesota and Western Wisconsin Beekeepers' Association will be held at Winona, Minn., in the Court-house, Feb. 27, and 28, 1917.

O. S. Holland, Sec.

The annual convention of the Pennsylvania State Beekeepers' Association will be held in the capitol building, Harrisburg Pa., March 2 and 3, 1917. An interesting program in preparation.

H. C. Klinger, Sec.-Treas.

Liverpool, Pa., Jan. 15.

The New Monthly, "The Domestic Beekeeper"

Have you seen the New DOMESTIC BEEKEEPER, successor to the Beekeeper's Review? It appeared January 1, 1917, with a new dress and improved in many ways. Besides the eight extra pages, each page is nearly 60 per cent larger than the old Review. We are paying much more for material and labor in getting out the DOMESTIC BEEKEEPER than the Review cost, but we are selling it at the same price—i. e., \$1.00 per year. If

you take advantage of the long-time subscription the price is even less than before the enlargement. We quote the DOMESTIC BEEKEEPER one year, \$1.00; two years, \$1.50; three years, \$2.00; five years, \$3.00. We are printing several extra sets of the DOMESTIC BEEKEEPER, so can begin your subscription with the January number, thus making your volume complete.

What We are Doing for Our Subscribers

Likely the most important feature of the DOMESTIC BEEKEEPER, from a financial standpoint, is our service department, where we buy almost everything needed by honey-producers at a considerable saving to them. Beekeepers' supplies, including honey-containers, are a special feature with this department. Then we have a department (absolutely free) where our subscribers' crop of honey is listed. This department has sold, without cost to our subscribers, many hundred tons of honey. You should take advantage of this department. If you have beeswax to be made into foundation, we handle it for you at a saving, having it made by any manufacturer you prefer. Your first number of the DOMESTIC BEEKEEPER will explain how to proceed to take advantage of this proposition.

The Editor is one of a committee whose object is to establish a selling price of honey, both at wholesale and retail. You should all keep tab on this great movement; and the DOMESTIC BEEKEEPER will be headquarters for information along this line. Subscribe today, so as not to miss a single thing said upon this important subject. There is not a single honey-producer who sells honey but is more or less interested in this great scheme, which is destined to become national in character. All producers of honey should get together and help this move along. You will find the DOMESTIC BEEKEEPER always working *wholly* for the producer, and the one journal that all producers should support. Remember the new address,

The Domestic Beekeeper, Northstar, Michigan